American Aviation

SERVING THE INDUSTRY SINCE 1937

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American Aviation

NEWSLETTER

Volume 15 Number 30 December 24, 1951

American Airlines has ordered 25 Douglas DC-7's, an advanced version of the DC-6 powered by four Wright 3,520-hp compound engines and grossing 116,800 lbs., or 16,800 lbs. more than the DC-6B. Top speed of the DC-7 will be over 400 mph and normal cruising speed over 360 mph.

Planes will cost about $1,590,000 each, with initial delivery scheduled for late 1953. They will enter service Jan. 1, 1954, cutting present one-stop New York-Los Angeles flight time to eight hours 10 minutes.

Order alters AA's earlier contract with Douglas for six DC-6A's and 24 DC-6B's. New contract calls for 36 planes, 11 of which are A's and B's and 25 DC-7's. AA will use 60-passenger interiors. Fuselage is 40 in. longer than DC-6B.

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Congressional talk of economy next year may mean civil aviation and CAA's budget requests will have a tough time at the next session. All reasonable military requests, especially for aviation procurement, will probably be approved but there will undoubtedly be some slashes in funds for administrative and other functions.

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A freeze on several military plane types is being discussed to step up production. Military and civilian defense officials have been studying the idea for several weeks and a decision should be forthcoming soon.

Both sides have valid arguments. USAF planners feel plane production lines should be kept flexible so that major or minor design changes can be incorporated without much trouble. This, of course, would insure the latest improvements in a given plane type as it rolled off the assembly line.

Civilian plane production officials, on the other hand, believe a compromise must be made so that aircraft can start pouring out in large numbers. They are convinced that needed changes could be incorporated in the planes at modification centers, the same system that was used with great success in World War II.

Although no widespread freeze is expected, the civilian officials will probably win a partial victory by getting two or three types stabilized. If it does happen, first planes to be affected will be the Boeing B-47, North American F-86 and Republic F-84.

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Civilian mobilization officials, tired of asking the Pentagon to rule on which military items should have the highest priority when it comes to getting machine tools and materials, have taken over the job themselves because they were unable to get satisfactory answers. Office of Defense Mobilization personnel must be doing a good job in making the decisions because the military hasn't voiced a complaint as yet.

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Aircraft, aircraft accessories and ordnance program fared well in first quarter, 1952 grants of structural steel for expansion. NPA approved 83,756 tons, or 94.5% of the 88,701 tons originally requested.

Only other groups to receive higher percentages of their stated requirements were aluminum, magnesium and light metals (98.6% or 25,656 of 26,000 tons asked) and electronics and communications equipment (97.8% or 4,620 of 4,722 tons sought).

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Decision to start trans-Atlantic tourist fares next spring will probably cause several European carriers to reshuffle their planes on certain routes.

Examples include Swissair, which may place Convair Liners on its routes to the Near and Middle East, thus freezing Douglas DC-4's for the Atlantic trade; SAS, which may also use twin-engine equipment on its present European routes and Air France, which may have to reduce its DC-4 flights to Germany and the Mediterranean, using the -4's to French Equatorial Africa and Madagascar and freeing its Lockheed Constellations for Atlantic tourist service.

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In a belated but welcome step, DPA has taken action to make sure aircraft builders and other defense contractors get the components they need to maintain production schedules. DPA Administrator Manly Fleischmann promised:

(1) **Preferred status of CMP orders** bearing A to E symbols will be maintained and machine tool producers would get equal status with a Z-2 symbol.

(2) **If this preference system breaks down,** the agency will issue directives to see that A to E and Z-2 orders are placed.

(3) **Directives will be issued** to see that component builders for the A to E and Z-2 programs can get their materials orders placed even though they are not directly in the preferred category.

(4) **In cases where components** and products for the A to E program conflict with non-military programs, defense producers will get delivery first.

(5) **When A to E and Z-2 producers** cannot place

their orders for B products promptly, directives will be issued.

Fleischmann also confirmed that a small group of aircraft component builders will get special treatment in placing metals orders at the mills (Newsletter, December 17). The agency, however, still has not worked out the full details on the priority system for these 23 firms.

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Office of Price Stabilization has exempted new and unused aircraft and aircraft parts from price control. In an ammendment to General overriding Regulation 9 the agency extended the present exemption of military planes and parts sales to include civilian aircraft and parts sales as well.

New ruling will apply only to equipment designed specifically for use as aircraft or aircraft parts. Thus, if a fuel pump can be used in both a plane and automobile, it will remain under price control. If the piece of equipment can be used only in an airplane, the price exemption applies. OPS order covers both foreign and domestic sales.

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MANUFACTURERS

Collier Trophy for 1951 went to the helicopter industry for turning out rotary wing aircraft in quantity and to the military services and Coast Guard for developing their use in air rescue operations.

Lockheed backlog now stands at $1,280,000,000, with 89.6% of it military orders. Firm payroll has reached 37,000 workers, with 25,000 of them at Burbank and Van Nuys, Calif.

Ceiling Price Regulation 30, which governs the prices of many aircraft parts, was scheduled to become fully effective Dec. 19.

Wright-Patterson AFB officials are consulting with aluminum producers and heavy press builders to determine whether the present USAF press program is satisfactory or whether other presses will have to be built. Aircraft firms recently told the Air Force what present plane parts are now extruded or forged and also what other parts could be formed in that way.

Senate Preparedness Subcommittee has postponed its hearings on Air Materiel Command procurement irregularities until after Jan. 1.

Small Defense Plants Administrator Telford Taylor has scheduled a conference of the 50 large firms who hold the bulk of defense contracts for next month. He wants more information on how these companies are dividing their sub-contracts between small and large business.

All officers of Beech Aircraft Corp. were re-elected for the coming year, including Mrs. Walter H. Beech as president.

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PLANES AND EQUIPMENT

Chase Aircraft has received a USAF contract to investigate boundary layer control on the C-123. Flight investigations are not covered in the first contract but basic research and possibly a mock-up will be studied. The BLC system for the C-123 is different from one used on a Cessna 190 by NACA. The Cessna tests drew air away from the critical area above the wing so that the wing drag was reduced and lift was increased. They indicated that the technique is practical, but not with small planes, since the weight of the equipment offsets increased lift advantages.

Second Boeing XB-52 is complete from an airframe standpoint and awaits deliveries of more Pratt & Whitney 10,000 pound thrust J-57 engines before being ready to start its taxi tests. First priority on the J-57 now goes to Convair's YB-60, however. Boeing's first XB-52 should start its tests soon.

New air-transportable Gilfillan Bros. GCA trailer units which can handle three planes at a time are now in operation in Korea. Deliveries of the units are now ahead of schedule.

Refueling tests on the Republic F-84G are now in progress at Edwards AF Base with a Boeing KB-29 serving as the tanker plane. The straight-wing G model not only is equipped for in-flight refueling but also is the first Thunderjet to have an automatic pilot as part of the range extension program.

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AIRLINES

American Airlines on Jan. 10 will cut back transcontinental coach fare from $110 to $99. AA also plans to double its existing coach service this spring and eventually will expand operations to other cities not yet designated. Daily Chicago-Los Angeles round-trip will be added Mar. 2 and will be extended to transcontinental on June 1. Meanwhile, another complete coast-to-coast flight will be added Mar. 23.

U. S. domestic airlines, through Air Traffic Conference, have voted to appoint a special three-man committee to find ways and means of combatting the "no show" problem. Committee members, to be chosen from the airlines, will spend 90 days working full time on the problem.

Non-scheduled carriers have been warned by CAB against improper treatment of passengers. CAB said non-skeds should watch practices of employes and ticket agents to assure that services are not misrepresented, passengers not misinformed and tariff rates observed. Procedures relating to reservations, ticketing and handling of passengers and baggage should be revised and improved, and passengers should be accepted only from agents with whom the carrier has written contracts containing appropriate provisions for protection of the public, it added.

James W. Austin, vice president-traffic and sales of Capital Airlines, was elected Dec. 11 as president of the Air Traffic Conference of America for the coming year. Harding Lawrence, vice president-traffic of Pioneer Air Lines, and Charles R. Speers, assistant vice president and general sales manager of American Airlines, were named first and second vice presidents, respectively. Walter Sternberg, vice president-sales of National Airlines, was outgoing president.

Lewis C. Burwell, Jr., founder of Resort Airlines, only U. S. certificated tour operator, has sub-

(Continued opposite page 54)

A Merry Christmas to you, United, and our congratulations to the nation's oldest airline on the occasion of its silver jubilee. It seems incredible, but it is true that your twenty-five years have spanned the entire history of commercial aviation. Collins salutes you for the tremendous contributions your pioneering has made in the development of what is now one of America's greatest industries.

First Officer Robert Refvem (left) gives Captain James O. Johnson a demonstration of a Collins 18S high frequency radio transceiver. On the second rack below are two Collins 51R very high frequency omnirange navigation and communication receivers. These types of Collins equipment are standard on all United Air Lines Mainliner Stratocruisers.

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Editorial

The Men Who Did the Impossible

For this last issue of the historic air transport year of 1951 which marked the 25th anniversary of scheduled air mail, passenger and cargo transportation in the United States, we turn over our editorial space to the pertinent portions of a speech which W. A. Patterson, president of United Air Lines, delivered October 18 before the 1951 Utah dinner of the Newcomen Society of England at Salt Lake City. Few have ever highlighted air transport progress as Mr. Patterson has done. His remarks make for rich and thoughtful reading.—WAYNE W. PARRISH

IN 25 years the newest member of the nation's transportation family has gone far. It has occupied a front rank position in the national scheme of passenger transportation and mail and express communication. It has not, as predicted by irresponsibly optimistic proponents of its pioneering days, run the railroads out of business. Rather it has proven that there is an important place in our national transportation schedule just as the older and more established forms of transportation also have their rightful places.

In appraising this progress, it becomes apparent immediately that the story of aviation's first 25 years is really the story of achievements of *men*—men who were pioneers, men with vision and with courage to accept the challenge to build a new industry literally out of thin air; men who set their sights high and kept them there despite discouraging setbacks with which they were constantly confronted.

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There were the pilots, romantic veterans of the First World War's aviation, and the happy-go-lucky barnstormers of the postwar aerial circus days. They were the men who flew the pioneering planes, despite the fact that lacking aids of any kind the odds were 25 to one against their individual survival over an 18-month period. They were the men who put meaning into the Post Office Department's slogan: *"The mail must go through."*

Then there were the pioneering investors—the men who had the vision to see air transportation's potential, who put their time and their money and in some cases their life's blood into the job of starting out with nothing and building an airline. They were the men who listened when the so-called experts said: "It's impossible"—the men who went ahead and did the impossible.

I would like to mention some of these pioneers, and tell you a little bit about what these men have done for the industry:

There was Walter Varney, a San Franciscan who bid on the route from Elko to Pasco. There was no other bidder, and I think that is easy to explain because I don't believe many people in the United States knew where Pasco and Elko were at that particular time. He did, so he bid. This is the route which later in the year was terminated in Salt Lake City.

Walter Varney did a great deal of pioneering, particularly in the field of merchandising. He came from the old Varney and Green family, the outdoor advertising people, and in his day he introduced advertising and merchandising methods, unusual for that time, advancing use of air mail.

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There were C. M. Keys and his associates of the old National Air Transport, predecessor of United in the Eastern United States. They thought that there should be an airline between New York and Chicago. They raised part of their capital in New York, and then came to Chicago. They went to the usual two hundred people that everybody goes to in any city to get a few dollars together to undertake something for the advancement of their community, but they were fooled.

They went to the Reynolds, to the Wrigley, Srs., to the Mitchell, Srs. But those people weren't interested in *flying machine* companies. Then someone got the idea of approaching their sons. So they went to Phil Wrigley, *Jr.*, to John B. Mitchell, *Jr.*, to Earl Reynolds, *Jr.*, and to others of the second generation to put up their money. That move was a success, for the juniors weren't as conservative as the seniors.

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Then we come to the man I believe the most interesting personality of all—the man who started the air route up and down the Pacific Coast—Vern Gorst. There indeed was a real pioneer in aircraft transportation. As a very young man, Vern Gorst went to Alaska and actually carried goods on his back, saved a little money, bought a dog team, and continued to advance. Then he decided there must be something to the bus business. He bought an old Pierce-Arrow chassis, built a bus top on it, and started operating a little bus company in Southern Oregon. And why is he so interesting? Because at the time he came into business, there were some experts in the field. They were the Harris Hanshues, the William Boeings, the Philip Johnsons, and others who knew the airplane business, at least what there was of it.

But all the experts said you could never develop an air transportation route on the Pacific Coast. You might be able to do it between Los Angeles and San Francisco, but no airplane would ever be flown successfully north of San Francisco.

Vern Gorst didn't know that it could or couldn't be done. In fact, he had no idea as to the success of it; but he was progressing in transportation. He bid, and he got it because no one else bid north of San Francisco.

Vern Gorst told me that he had $3,000. I don't know who his lawyer was or who his investment banker was, but he decided they would sell some *Class B* stock which was non-voting, and *Class A* stock which would be voted. He would sell $3,000 of that to himself and he would sell the *Class B* stock—which he underwrote himself, by the way—up and down the Pacific Coast.

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Then they told him that he had to fly nights and that couldn't be done. He went out and he bought some beacon towers which had been placed along the coast by the Richfield Oil Company for advertising, picked up some Ford headlights, put those on top of the towers, and used a regular alarm clock mechanism to turn the lights on and off. If a man wanted to fly for his company, he first had to go out and help put up those towers. The personnel of the company put the towers up north of San Francisco.

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As I said earlier, I think that Vern Gorst was one of the most interesting characters, because he was truly a pioneer in transportation. On the other hand, he had no technical knowledge whatsoever. There was a case where ignorance was a great asset, and he did a great job.

It was obvious in 1929 that we were getting nowhere

technically or scientifically. One thing we knew we would have to have was *communication* between the ground and planes in flight.

We went to Bell Laboratories, to Western Electric, to every known authority at that time. They said it could not be done. So we took them at their word. One evening, we had an accident just west of Cheyenne, Wyoming. In those days when a pilot left his point of origin, he had his weather report but he didn't have any knowledge of any *change* that might occur while he was en route. If the weather did change, the ground crews put red flares out at intermediate fields as a signal to the pilot to turn back.

This particular night, the weather changed for the worse. We put two red flares out at Rock Springs, Wyoming, for the pilot to turn around and come back. Instead of that, he flew south of Rock Springs. He did not see the flares. He cracked up just west of Cheyenne, Wyoming, and a passenger lost his life.

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We were at Mr. Boeing's home, as we always were when such incidents took place. Mr. Boeing was pacing up and down the floor. "I wish there were some way in which we could develop communication between ground and the air," he said. One of the guests was Mr. Thorp Hiscock, a hop rancher from Yakima and also a former banker from Syracuse. Hiscock had no technical background whatsoever. I think he did go to Cornell for seven or eight months and was invited to leave. He went into the banking business and didn't like that. . . . Finally he went West and, as stated, became a hop rancher in Yakima.

On this winter night, sitting there, he said to Mr. Boeing: "Why don't you?" Mr. Boeing said: "Well, we've been to all the authorities in the field of electricity and they say it can't be done." Mr. Hiscock said: "That is silly." Mr. Boeing said: "Do you know of anyone who can do it?" Hiscock replied: "I will do it."

"How much do you need?" asked Mr. Boeing. Said Mr. Hiscock: "Give me a budget of a hundred thousand dollars."

Hiscock started out and we would get reports from time to time that there was a little noise between the ground and the air but it certainly wasn't voice and it couldn't be called communication. After about two years, however, it was my pleasure to fly with him over Medford, Oregon, when we actually did talk to the ground.

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During that development, Hiscock felt that there was a certain stage at which he was making no particular progress. He felt his own weakness, which was a lack of technical ability, so I talked Western Electric into loaning us five engineers to conduct some night tests in Salt Lake City. Three days later, Mr. Harry Young, then Vice-President of Western Electric, called me. "I guess you know our boys are back from Salt Lake City?" he asked. I said: "No, I hadn't heard that." He said: "That man Hiscock you have out there is crazy. You are wasting your money."

To make a long story short, it was just one year later when Hiscock and I were in Detroit attending an aircraft show. There was a knock at the door and it was Mr. Young. He said: "Will you gentlemen have dinner with us tonight?"

We went down the hall. There were some Vice-Presidents of Western Electric, and they said: "Hiscock, we're whipped. Where do we go from here?" He said: "All I know is that everything I am doing is in violation of patents you already have developed." He said: "You want to know where we are going? Well, you start building these things, because frankly, I don't think I know how to build anything other than the one we have built."

Now, that *was the turning point* from which we started to move into the development of electronics which contributed so much to the regularity and safety you see today.

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There was still another development. We had been having trouble with ice. A man with no technical background was sitting in the Edgewater Beach Hotel in Chicago, when there came a light rain and then a freeze. The green flag on the hotel that was slightly rippling began to flop as the wind came up and we could see the ice coming off. He said: "Pat, *there's* a de-icer!" With that we went to Goodrich and asked them to develop *a rubber boot* which inflated and deflated and knocked the ice off. That turned out to be a standard airplane de-icer.

Another one was the controllable pitch propeller which gives increased performance. The same man was attending a show of equipment being used in the construction of Hoover Dam. He looked down at this display and saw a hydraulic control. I happened to be with him. He said: "Pat, I'm going to buy that." He wrote a little note and sent it to the Hamilton Standard Propeller people. "I think this will give you a controllable pitch propeller," he said. Within a year there was a controllable pitch propeller, and it was from the hydraulic system that it developed.

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I could go on with stories about other pioneers whose contributions were important to this business, but I have cited these simply to characterize for you gentlemen, something of the indomitable spirit and courageous vision of the men who just a short 25 years ago built the very solid foundation for *a billion dollar business;* men to whom the real credit must go for planting the flag of the United States well out in front in the Aerial Merchant Marine of the World!

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As the air transport industry leaves its first quarter century of progress and crosses the threshold into the next 25 years of development, it is interesting to speculate on what tomorrow will bring, but it is also unsafe to do so. Twenty-five years ago if a prophet had forecast that today you could board a 300-mile-an-hour 4-engine, pressurized airliner and leave New York *at noon,* with arrival in Los Angeles *at 8 o'clock in the evening,* his predictions would have been received incredulously by most people. Now the tempo of technical advancement is becoming ever faster; and what, yesterday, seemed a far-off possibility, has become today's reality!

We know that turbo-jet engines and ultimately jet engines will be used to power the streamlined airliners of tomorrow. We know that speeds of 1,000 miles an hour within 25 years are reasonable to expect; and in fact perhaps conservative. That would mean that 25 years or less from now you could leave New York *at 12 o'clock noon* and be in Los Angeles *at 12 o'clock noon,* with the three-hour time zone differential erasing the actual three hours time it would take your automatic navigated jet transport to speed at 40,000 feet across the Nation, from the Atlantic to the Pacific!

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The first 25 years of Air Transportation have seen a new industry *come of age.* The next 25 years should see the commercial airplanes becoming even more useful, more productive, and a more important force in the daily social and economic lives of people everywhere.

When & Where

Jan. 5-6—Annual Miami Air Show, Opa Locka Airport, Florida.

Jan. 6-8—Annual Cessna Distributors Meeting, Allis Hotel, Wichita, Kansas.

Jan. 8-10—Armed Services Procurement Clinic, National Guard Armory, Minneapolis, Minn.

Jan. 14-18—Society of Automotive Engineers, Annual Meeting, Hotel Book-Cadillac, Detroit, Michigan.

Jan. 21-22—Fifth Annual Conference of National Aviation Organizations, Washington, D. C.

Jan. 28-Feb. 1—Institute of the Aeronautical Sciences, 20th Annual Meeting, Astor Hotel, New York.

Jan. 29-31—American Meteorological Society, National Meeting, Roosevelt Hotel, New York.

Feb. 7-8—Instrument Society of America, New York Section, Power Plant Symposium, Statler Hotel, New York.

March 3-6—Institute of Radio Engineers, Waldorf-Astoria Hotel and Grand Central Palace, New York.

March 14—Institute of the Aeronautical Sciences, Seventh Annual Flight Propulsion Meeting, Cleveland, Ohio.

March 17-19—Second Mid-Western Conference on Fluid Mechanics, Ohio State University, Columbus.

March 17-22—American Society of Tool Engineers, International Amphitheater, Chicago, Illinois.

March 30-April 3—American Society of Airport Executives, Annual Convention, Fort Worth, Texas.

April 21-24—Society of Automotive Engineers, Aeronautic, Aircraft Engineering Display & Technical Air Review, Statler Hotel, New York.

May 15-16—American Helicopter Association, 8th Annual Forum, Washington Hotel, Washington, D. C.

May 22-24—American Society for Quality Control, Sixth Annual Convention, Syracuse, New York.

June 9-21—International Organization for Standardization, Triennial Meeting, Columbia University, New York, N. Y.

June 23-27—American Society for Testing Materials' 50th Anniversary Meeting Statler and New Yorker Hotels, New York.

International

Jan. 22—ICAO, PEL, Fourth Session, Montreal.

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other publications

American Aviation Daily (including International Aviation): Published daily except Saturdays, Sundays and holidays. Subscriptions: $16 one month; $180 one year. Daniel S. Wentz II, managing editor.

American Aviation Directory: Published twice a year, spring and fall. Single copy, $7.50. Marion E. Grambow, managing editor.

Official Airline Guide: Monthly publication of airline schedules and fares. Subscriptions: U. S. A. and countries belonging to the Pan American Postal Union, including Spain and the Philippines, $9.00 one year, Canada, $9.50. All other countries, $11.00. Published from editorial offices at 130 North Clark St., Chicago 2, Ill. Central 6-5804. C. N. Johnson, managing editor.

American Aviation Traffic News (incorporating Air Tariff Reports): Published daily except Saturdays, Sundays and holidays. Subscriptions: $150 a year. Preble Staver, managing editor.

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American Aviation is published every Monday by American Aviation Publications Inc., Washington, D. C. Printed at the Telegraph Press, Harrisburg, Pa. Subscription rates for United States, Canada, Mexico, Central and South American countries—$5.00 for 1 year; $8.00 for 2 years; $10.00 for 3 years. All other countries—$7.00 for 1 year; $12.00 for 2 years. Entered as Second-Class matter in Washington, D. C., and Harrisburg, Pa.

Publishing Corporation: American Aviation Publications, Inc., Wayne W. Parrish president; Albert H. Stackpole, Eric Bramley, vice presidents; E. J. Stackpole, Jr. secretary-treasurer; Leonard Eiserer, assistant secretary-treasurer.

West Coast Office: Park Central Building 412 West Sixth St., Los Angeles 14, Calif. Trinity 7897. Fred S. Hunter, manager.

Chicago Office: 139 North Clark St., Chicago 2, Ill. State 2-2154. Bruce L. McGregor, regional advertising manager.

Foreign Advertising Representative: United Kingdom—Pearl, Cooper Ltd., 2-3 Norfolk St., Strand, London, W. C. 2. Tel. Temple Bar 8111/2.

American Aviation incorporates Airports and Air Carriers, Airports, Aviation Equipment, The American Pilot, Aviation Sales and Service, U. S. Aviation and American Airports.

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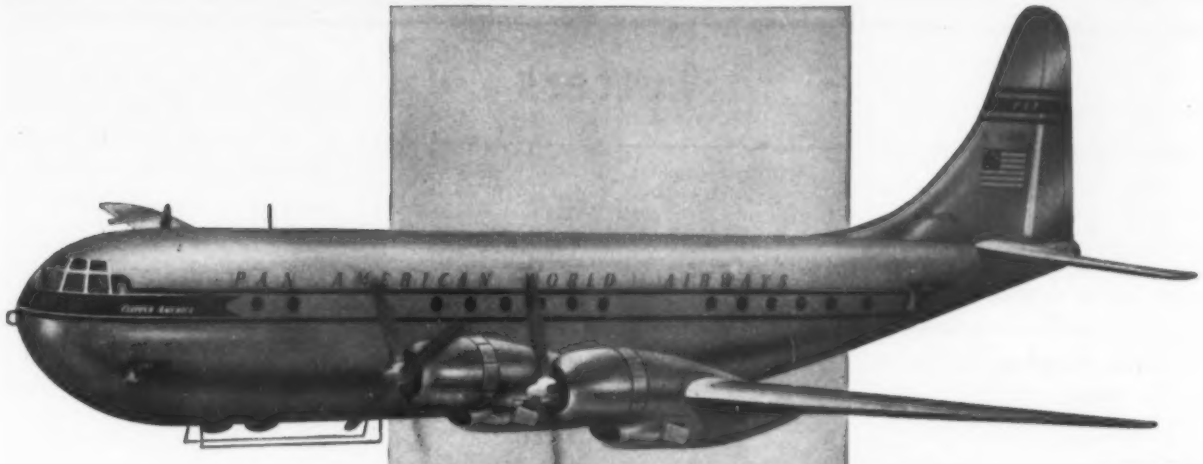

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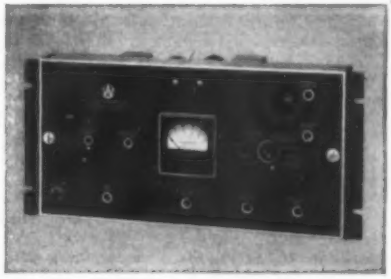

Pan American World Airways System Selects WILCOX Type 408A Transmitter and Type 305A Receiver for Idlewild International Airport VHF Installation

New features offered in fixed frequency equipment for the 118-132 mc/s band:

50 WATT TYPE 408A TRANSMITTER

1. Automatic coaxial transfer relay permits operation of transmitter and receiver from same antenna.
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3. Only thoroughly proven octal and transmitting type tubes are used in R.F. stages.
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Write Today for complete information and specifications on the Wilcox Type 408A Transmitter and the Type 305A Receiver.

Letters

Letters should be addressed to The Editor, American Aviation Magazine, 1025 Vermont Ave., N.W., Washington 5, D. C. Anonymous letters will not be printed, but names will be withheld upon request.

Likes Hughes Indicator

To The Editor:

In your November 12, 1951 issue William D. Perreault is off base about a nautical mile in his safety article when he says that terrain clearance indicators "simply would not work" and for that reason were thrown out of the picture.

I am a regular line pilot for TWA and we have now, and have had all along, the Hughes Terrain Warning Indicator. It works, works well and is working about every time I get in a Connie or any other of our airplanes. Talking to our maintenance people, I find this equipment has as good a repair, overhaul and failure record as any other radio equipment.

I like the equipment and, while we all hope the future will bring something that does a bigger job, having the Terrain Warning Indicator is a certain source of comfort. I personally had a pressure-type altimeter failure a few years back and the Terrain Warning Indicator brought it to attention. As circumstances happened, it would not have been a fatal accident, but another time it might have been.

I've always wondered what kind of "tests" etc., were conducted by the authorities when they decided not to require an instrument of this type. After all, with all the wonderful things being done electronically, it seems pathetic that our million dollar airplanes still get altitude information from the ancient barometer that doesn't even tell you how high over the ground you are, but just refers to a theoretical place in space, and is subject to all kinds of errors.

I'm glad our company planes have more than that.

ROBERT N. BUCK,
Westfield, N. J.

(Our thanks to reader Buck for an interesting progress report on TWA's experience with the Hughes Terrain Warning Indicator, comments that will attract wide industry attention. The comments in the article were not a matter of the writer's whimsy. In rescinding the regulation requiring the installation of terrain warning indicators in transport aircraft, the Civil Aeronautics Board said it had been led to believe that devices of sufficient reliability to justify installation and tests had been developed, but that the operational experience of the airlines "does not bear out the earlier indications."

In this same regulation, Special Regulation 320 of April 29, 1948, the Board cited the experience of two airlines. One line had more than 70 cases of malfunctioning for 30 aircraft installations during two months. The other had to change 177 units on 92 aircraft during a four-week period. The real item of concern was false indications. CAB noted that the TWI's gave false indications of altitude due to electrical interference, rain or wet snow and that "of particular significance is the fact that certain conditions cause an indication of altitude higher than the actual altitude, thus giving the pilot a false sense of security."—Ed.)

Wrong 'First'

To The Editor:

I should like to call your attention to a statement made in a recent issue of AMERICAN AVIATION, which I believe to be incorrect.

It seems the Lockheed L-1049 is claiming the largest windows in any U. S. transport. They claim 16" x 18"—if I am not mistaken, the Douglas DC-6's were delivered years ago with windows that size. If I am in error, please correct me. If I am correct, please advise me of same. I shall be watching for an answer in the "Letters" section of your magazine.

A Douglas booster and Delta employee.

DICK SONNENBERG,
Chicago, Ill.

(Reader Sonnenberg is correct. A check with Douglas confirmed that the standard passenger window in the DC-6 is 16 x 18 inches in size. We make a brave attempt to avoid such expressions as the "first," "biggest," "fastest," etc.—words used in at least 75% of the copy received here from industry groups, but occasionally get caught napping.—Ed.)

VOR's in Germany

To The Editor:

I noted with interest your article (Oct. 15 issue) on the VOR program in Europe. I am afraid, however, that this article might have created a false impression inasmuch as the eight VORs being installed in Germany were included with those that CAA's London Office were promoting, which might imply that they were purchased through ECA. Such is not the case, however, as the eight VORs for Germany were purchased by the Civil Aviation Division of the Allied High Commissioner, U. S., with D-Mark funds furnished by the Federal German Government. (Not Occupation Cost Funds!) I think also that reference to offshore procurement by European ECA members in column 2, paragraph 3, should have read "Outside United States."

Credit for the development of this program in Germany should go to Mr. Clinton C. Van Cott, Radio Engineer on loan to HICOG from the CAA. Having no dollars to spend for the purchase of VHF navigational aids for Germany, and realizing the importance of developing a European source of VOR ranges, Mr. Van Cott was able to interest and assist the Lorenz Co. in the manufacture of VOR, the first unit of which has been installed at Stuttgart and is now undergoing exhaustive tests.

The balance of VORs are coming off the Lorenz assembly line, and it is expected that the eight presently planned for the Federal Territory and Berlin will be installed by next April.

Excellent cooperation has been received from Mr. Sturtevant and his CAA cohorts in London, and as I am writing this, N-17 with CAA Pilot Fisher at the controls is in the process of flight checking the Stuttgart installation.

THOMAS D. JOHNSON
Chief, Civil Aviation Division
Office of the U. S. High Commissioner for Germany
Wiesbaden, Germany

'Constructive'

To The Editor:

I have enjoyed reading the article by James J. Haggerty, Jr. in the Nov. 26 issue of AMERICAN AVIATION about the creation of additional air forces. The piece is well done and is entirely constructive.

C. R. SMITH, President
American Airlines, Inc.

Sensible Idea

To the Editor:

In my opinion, there is a matter that could stand a little air and light.

It looks as if the Department of Defense is going to operate all of the transport type aircraft through the Air Force, leaving the Navy out of the transport picture. If this happens, what is going to happen to the Navy pilots who know nothing but transport aircraft (DC-4, Connie, etc.)?

The Navy says, in official releases, that it has more pilots than it needs. According to Mrs. Anna Rosenberg, Assistant Secretary of Defense, the Air Force is "short of pilots . . ."

But, it is *not* possible for a pilot to transfer from the Naval Reserve to the Air Force Reserve. It would be interesting to find out why. I am a reserve lieutenant USN. I have been flying airline since I went on inactive duty in 1945.

I have almost 7,000 hrs., about 3,000 on four-engined equipment. I am willing, I want to go on active duty with the Air Force as a pilot, but it is not possible to do so today.

Another thing is the matter of rank, not for the rank itself, but for the pay. With the present AF regulation, even if I could get a commission, it would mean a bust in rank and a consequent loss of pay . . .

In summary: The AF is short of men—taking people who do not want to go on active duty or on whom it would work a hardship. The Navy has more than they know what to do with.

Let us make it possible for an individual to transfer from one branch to another with equivalent pay when there is a shortage in one branch and a surplus in another.

R. K. PENFIELD
Wantaga, N. Y.
First Officer, TWA.

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BOEING

B.F.Goodrich

Another fast plane fights better with new De-Icer

IT TOOK only 21 days to design, install and test a new-type De-Icer for Chance Vought's Corsair. Fast work like that is proof that these tough little fighters needed ice protection in a hurry.

Two big questions were involved. Would the high performance of the Corsair tend to tear off the De-Icers in flight? Would De-Icers upset the plane's flight characteristics? The Navy and Chance Vought found out that B. F. Goodrich had been working on new De-Icer developments and had the answer.

BFG engineers in cooperation with Chance Vought engineers designed, installed, and flight-tested this new-type De-Icer on a Corsair. The new De-Icer had its entire inner surface—not just the edge—cemented to the wing. Further reinforcement was provided by a screwed-on fairing strip. The new De-Icers came through the high-speed tests without a sign of damage. Original flight characteristics were maintained.

The designing, installing, and test-flying was followed by fast production, and within a short time, De-Icers were in use on Corsairs over Korea. The new De-Icers have extra efficiency in removing ice because they have smaller air tubes with higher air pressure and faster inflation and deflation cycles. They are light in weight, yet tough and long-lasting. Their plumbing takes up little space. With De-Icers on the outside, readily accessible, maintenance is easy. The new De-Icers are now proved practical for high-speed single engine planes as well as twin engine or larger.

Safest ice-removal device for airplane leading edges yet developed, De-Icers are another product of B. F. Goodrich aeronautical research and engineering. Let us help you design De-Icers into your single engine planes. Write *The B. F. Goodrich Company, Aeronautical Division, Akron, Ohio.*

B.F.Goodrich
FIRST IN RUBBER

ESTABLISHED JUNE 1, 1937

American Aviation

VOLUME 15 NUMBER 30

PHOTO ON LEFT shows the three cars of the Loadair in extreme "out" position. Car on left is for nosewheel, others for the two main wheels. With tailwheel airplanes, main wheels go on cars, and tailwheel swivels and trails. Photo on right shows plane on cars ready to be moved sideways to the terminal — to the left of the plane.

Whiting's Loadair Impressive in First Tests

Airlines, airports show interest in automatic plane parking device at Colombian demonstration.

By Eric Bramley

Barranquilla, Colombia—An impressive demonstration of Whiting Corporation's Loadair, an automatic means for parking planes adjacent to an airport terminal to speed ground movement of passengers and cargo, was held this month at Soledad Airport here.

Comments on the Loadair's performance were favorable among the U.S. and foreign airline, manufacturing and airport representatives who attended. Chances are good that other installations will be made.

This first installation was made for Aerovias Nacionales de Colombia—AVIANCA, which lays claim to being the largest cargo carrier in the world and which, therefore, can give it a rugged test. In addition, AVIANCA owns Soledad Airport, and the details of installation were thereby simplified.

Success of the Barranquilla Loadair is attested to by Col. Herbert Boy, manager of AVIANCA's cargo flight operations, who stated that the device, which has been in operation several weeks, has reduced average turn-around time of C-54's and C-46's approximately 40 minutes, or 50% of the best previous average performance.

Briefly, the Loadair consists of three cars almost flush with the airport pavement, traveling on rails from the taxi strip to the terminal building. One car handles the nosewheel, the other two the main wheels. The cars for the main wheels are pulled by underground cables; the nosewheel car is not powered.

Push button operation moves the cars bearing the plane sideways until it is against the terminal, and unloading and loading are directly into the building.

Although AVIANCA is presently using the device only for cargo, airline representatives present said they saw great possibilities for its use in the loading and unloading of passengers.

The Puerto Rican Transportation Authority is considering installation of Loadairs at several gates at the San Juan airport, and American Airlines has expressed interest in a U.S. installation. AA now has the matter under study, will analyze the results of the Colombian installation over the next few months and will use the device if it is found to meet the company's requirements, according to Frank Jones, AA's cargo service director, who attended the demonstration. In addition, AVIANCA may consider installing one at Bogota.

Advantages claimed by Whiting for the Loadair include:

Reduces ground time for planes and thus increases utilization.

Eliminates expensive mobile equip-

PLANE AT "IN" POSITION against terminal, ready for unloading. Photo on right shows unloading on to a conveyor.

STEVENS H. HAMMOND (right), chairman of the board of Whiting Corporation, discusses Loadair at Barranquilla with Dr. Felipe Monino, technical adviser to the president of AVIANCA.

ment and the operators of such equipment.

Reduces snow and ice removal costs.

Fueling, servicing and maintenance (line service) operations are speeded because facilities may be in fixed positions.

Improves control of passenger and cargo traffic routing.

Protects passengers and cargo from unfavorable weather or temperature.

Fragile merchandise is loaded and unloaded with greater care.

Large savings are made in paving expenditures due to smaller overall area of pavement. Such savings, Whiting says, will often more than pay for the Loadair.

Paving is eliminated or of considerably less thickness around the track area.

Collision hazards are reduced because mobile ramp equipment is eliminated and because pilots do not have to taxi into close quarters.

AVIANCA's Loadair will handle either C-54's or C-46's. A plane is taxied on to the cars, which are equipped with spring-loaded chocks. These chocks are hinged, and fold if the plane is being taxied too fast. Once the plane is on the cars, two control stations go into action. One is on the ramp, the other in the terminal.

Double Safety

A button must be pushed at both stations before the cars will move. This system means that two men must be watching the plane—a double safety precaution. If either button is released, the cars stop.

The plane moves at a rate of 150 ft. per minute until it is 10 ft. from the dock, where it automatically stops. At this point, transition is made to low-speed control (80 ft./min. maximum), the movement being controlled by an "inching" button on the dock.

As the plane approaches the dock, a limit switch strikes the fuselage just aft of the wing, and all movement stops. It is then in position for unloading. Time consumed in traveling from the "out" to the "in" position is 25 seconds.

To travel in the other direction, two "out" buttons must be pushed. There is no "inching" button for this operation, and the plane is stopped in the correct "out" position by limit switches in the tracks.

The control box on the dock also contains a fire station. If the plane should catch fire while at the dock, a switch in the fire box is pulled and the plane immediately goes to the "out" position. This keeps the fire away from the terminal area.

The Loadair, which can either be installed by an airport or by an airline, or jointly, can be modified to fit a number of needs. If it is to handle all types of planes, additional nose wheel tracks can be installed (in parking planes with tail wheels, the main gear is brought in on two cars and the tail wheel swivels and trails). These tracks are not powered and installation is relatively inexpensive.

If all types of planes are to be handled at one gate, some method must be used in the terminal to raise or lower the loading level to accommodate the different door heights.

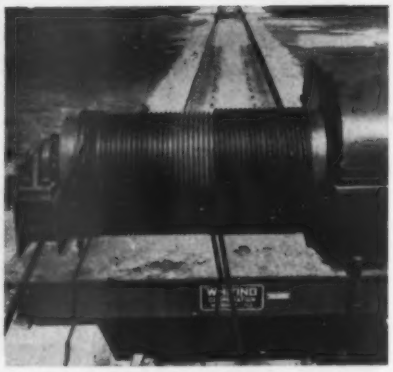
This writer rode with some passengers on a DC-4 which was handled on the Loadair. It was a new experience to be moved rapidly sideways and to step out of the airplane into a roofed terminal. The operation was quick and smooth and should offer great advantages in keeping passengers out of bad weather.

11 Minutes Total Time

We also observed several cargo unloading operations. A C-46, for example, took three minutes to travel in from the "out" position and to get the door open and a conveyor in place. Actual unloading of five tons of cargo by nine men took eight minutes. From the time the engines were cut until the last of the cargo had traveled down the conveyor into the warehouse was 11 minutes. An outbound load of cargo was on the dock and it was thus possible to start loading immediately. Fork lifts and similar equipment were entirely eliminated.

A C-54 with four tons of very bulky cargo was unloaded in 11 minutes, plus the time to get the plane into position.

The price of a Loadair installation will depend on a number of variables, and Whiting has not set any definite figures. Variables will include the length of track desired, and whether the device is to handle all types of planes. If planes are segregated, cost will be less. It is probable that prices will be somewhere between $25,000 and $45,000 per gate, depending on the variables. The



LOADAIR'S WINCH, with ¾-inch cable, is shown above. Photo is taken looking toward the "out" position.

Barranquilla installation is a joint Whiting-AVIANCA development.

Loadair was conceived in 1941 by H. W. Anderson, who joined Whiting at that time after serving as chief of air carrier inspection for CAA. After several delays because of the war, the device was completed. Stevens H. "Steve" Hammond, chairman of the Whiting board, has devoted much of his time to the development, and was present at the Barranquilla demonstrations.

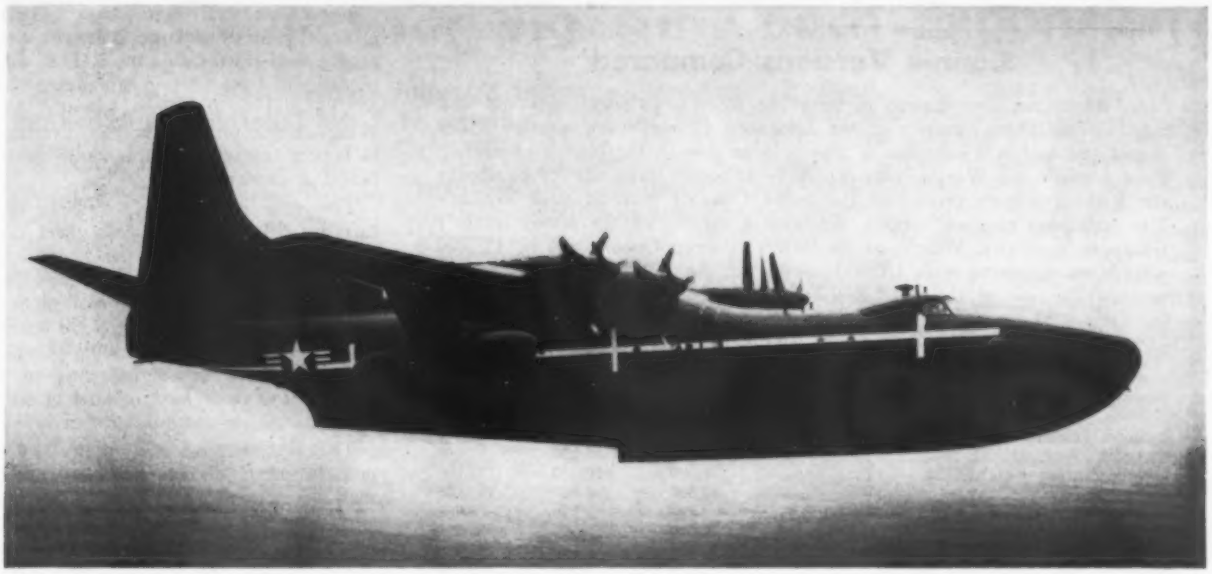
Explaining why he thought somethings had to be done to improve cargo loading, Herb Anderson explains, "The old method is like loading a ship in an open roadstead with barges. It's time-consuming and expensive. And it stands to reason that you can build a better fixed facility than you can a portable one, so why not bring the airplane to the fixed facility?"

Airline representatives, in addition to commenting on Loadair's potentialities for handling passengers as well as cargo, were also impressed with the possibility of performing all fueling and servicing at one location.

Those Present

Those attending the Barranquilla demonstration were Frank Jones, director of cargo service for American Airlines; Charles C. Gilbert, superintendent of stations office, Pan American World Airways, Miami; Harry F. Graham, superintendent of air cargo, Pan American-Grace Airways, Lima, Peru; Capt. Cesar Reyes Estrada, chief of operations, air cargo division, Compania Mexicana de Aviacion; John Koot, Colombian manager of KLM Royal Dutch Airline.

R. Spooner, Lockheed Aircraft Corp., Burbank; Richard Rouzie, Boeing Airplane Co., Seattle; John Randolph, chief of the aviation division, Puerto Rican Transportation Authority; Jerry Mulligan, CAA, Balboa, C. Z.; William Borland and Clifford Evans, Port of New York Authority; R. Dixon Speas, who is serving as a consultant for Whiting.



NAVY'S NEW CONVAIR R3Y transport shows advanced thinking in flying boat design. Note hull's long clean lines.

Navy Expanding Air Lift for Fleet Support

Convair flying boat rates high in plans; turboprops to be installed on Super Constellation.

By Richard Fuller

THE broadening potentialities of military air lift, which have recently been receiving new and top-level attention by the Air Force, are by no means being overlooked by the Navy.

Traditional Naval policy has been to view air lift as an important technique to support the Navy's prime striking force—the fleet. As a mobile force responsible for guarding great segments of overseas supply lines, Navy is aware of the potentialities of air transport in offering unparalleled speed of delivery of men and materiel. In the forefront of Navy men pushing for providing Fleet Logistic Air Wings with the best in equipment is Navy Assistant Secretary for Air John F. Floberg.

The Navy is now going ahead with plans, released exclusively to American Aviation, to boost effectiveness of its Fleet Logistic Air Wings as fast air carriers keeping the fleet supplied wherever it may be, at sea or in port; and to bring up to date all of the equipment of the Navy's MATS squadrons.

New Naval air transport developments are:

• **Ordering of a number of 350-mph Convair R3Y flying boat transports** and P5Y-1 patrol bomber versions of the same seaplane.

• **Testing Pratt & Whitney T34 Turbo Wasp** gas turbine engines on two Lockheed R70-2 Super Constellation transports. (See box for performance comparisons).

• **Modifying 100 Douglas R4D's** (basic DC-3's) to provide high performance in a local-service type of military transport.

• **Procuring removable kit installations** which can be used to modify the Douglas AD-5 as a passenger-cargo carrier capable of transporting 15 passengers plus the pilot.

Turboprops

Soon to be made public by the Navy are its plans to install turboprops on the Super Connie to make its performance even higher. With Pratt & Whitney and Lockheed Aircraft, the Navy has worked out details of the installation of 5,500-BHP P&W T34 Turbo Wasp gas turbine engines. Modification plans for the airplane are now being drawn up, and the turboprop plane is expected to show increased takeoff performance and endurance.

In speed, with maximum well over 400 mph, the new Connie will be the fastest military transport in service operation. Actual installation of the Turbo Wasps will not be made until the spring of 1953. Thus present production schedules which call for Wright 3350 compound engines in the R70-1 will not be disrupted.

The P&W T34 Turbo Wasp is a gas turbine engine that delivers power both to the propeller at the wing's leading edge and by jet thrust through a tailpipe. Navy's Bureau of Aeronautics, which has been pushing development of turboprop engines, chose the Super Constellation for the new installations, according to Rear Admiral Thomas S. Combs, Chief of the Bureau, because it was the Navy transport requiring least number of modifications.

Also in the mill is a procurement order for a "substantial number" of unmodified Super Constellations to replace older aircraft currently used by Fleet Logistic Air Wings and Navy squadrons serving with MATS. One of the turboprop Connies will be assigned to the Naval Air Test Center, Patuxent, Md. for demonstration and tests. It is planned that the other turboprop plane will remain at Lockheed for continued development.

In addition to its interest in better land planes, the Navy is also turning naturally to flying boats, the transport type which during the past few years has quietly undergone radically evolutionary changes both in powerplants and in aerodynamic and hydrodynamic design. Newest big boat is the Consolidated Vultee Aircraft Corporation's P5Y-1 patrol bomber, which the Navy believes is the best of its kind in the world.

The new R3Y, transport version of the P5Y-1, is the fastest large seaplane ever built. It has a top speed of more than 350 miles per hour. It will take off in less than 50 seconds at a gross weight of more than 80 tons, exceeding World War II piston fighters in rate of climb. It could make the trip from Alameda, Calif. to Honolulu, T. H. in a little more than seven hours with 80

Connie Versions Compared

Here are comparative performance figures, published for the first time, of the three versions of the Lockheed Constellation, aircraft which has played and will continue to play a large part in the Navy's expanding Fleet Logistic Air Wings. Navy will soon announce program for equipping the R70-1 (military version of the Super Connie) with Pratt & Whitney T34 turboprop engines, making the latest Constellation the fastest military transport in service. Weight of the new turboprop Connie will be 150,000 pounds, as compared with 130,000 pounds for the R70-1. Navy is currently prototyping two of the new R70-2's, with engine installations scheduled for early 1953.

	749A Connie (C-121A)	R70-1	R70-2
Powerplants	R-3350	R-3350 (compound)	T34
Takeoff power, hy	2,500	3,250	150,000
Takeoff gross weight, lbs.	170,000	130,000	150,000
Landing gross weight, lbs	86,500	110,000	113,000
Zero fuel weight, lbs.	82,000	105,000	107,000
Fuel capacity, gal.	5,820	6,570	8,700
Max. normal cargo, lbs.	22,000	33,500	35,700
Cruise speed at altitude, mph	295	320	394
Max. normal ton-miles per hr.	3,240	5,360	7,030

passengers or a cargo load in the neighborhood of 17 tons. The big flying boat will be powered by four Allison T-40 gas turbine engines developing more than 5,500 equivalent shaft horsepower each. The engines drive six-bladed Aero-Products contra-rotating propellers with some of the power utilized as jet thrust.

Boat Development

Here is how the new flying boat was developed:

Historically, flying boat design has been almost slavishly based upon the old NC-1 series which became the Navy's standard operational type. The NC-4 had a length-over-beam ratio of four and one-half to one, i.e., the part of the hull which rode on the water was four and one-half times as long as it was wide. Until 1938, when first plans for the P5Y-1 were laid down by Convair, hull lines had shown very little change. Expense of producing prototypes was a deterrent to new flying boat design. In order to circumvent this trouble and still go ahead with new design work, Convair began working with powered dynamic models controlled by radio. Under the direction of Ernest G. Stout and with work later sponsored by the Bureau of Aeronautics, the XP5Y-1 was first built and tested as a model or "skate." (American Aviation, Sept. 17). Then the full-scale prototype was constructed at the Convair San Diego Division.

The P5Y-1 bomber departs radically from previous flying boat designs. Its length-to-beam ratio is almost double that of previous conventional seaplanes. The hull of the new boat has been found by the Navy to be 250% more efficient than old-style hulls. Twice as fast as the older JRM Mars, the R3Y transport has a normal payload in the neighborhood of 25 tons and a cruising altitude of higher than 25,000 feet.

Above 150,000 pounds the R3Y is a more efficient carrier, the Navy believes, than a land plane of comparable size. The flying boat, of course, need not haul heavy landing gear, and its smooth hydrodynamic design makes it also "clean" from an aerodynamic point of view. Moreover, it requires no expensive land installations.

Its performance in the water, even in rough seas, is outstanding, the Navy says. A Landing Ship Dock can mother several of the boats, obviating necessity for the planes to spend two-thirds of their time traveling from their bases, as do comparable land planes. The flying boat will be able to go to sea with the fleet and remain there. Military punch carried by the patrol bomber version is about equivalent to that of a destroyer.

The Convair R3Y flying boats on order will bolster the Navy's present Fleet Logistic Air Wing PBM Mariners and JRM Mars. In addition to the flying boats now being used to supply the fleet, the Navy also operates land planes ranging from single-engined carrier craft to the four-engined R6D (Douglas C-54).

Modernized R4D's

Vitally needing a local-service type of aircraft for its logistic operations, the Navy is now modifying 100 well worn R4D's (basic DC-3 type). Navy claims that this modification program which is based on Super DC-3 specifications, is being carried out at a fraction of the cost and time involved in procuring new planes. Primarily a cargo transport, the modernized craft, called the R4D-8, will be allocated to Navy squadrons in MATS and to the Fleet Logistic Air Wings. Some of them will go overseas to bolster transport equipment in other Naval squadrons.

The new plane has provisions for carrying either 30 or 35 passengers, depending on type of seats used. Maximum seating for the original R4D was 28. The Navy believes that the new planes, whose speed is increased by 50 knots over the older models, will provide three-fourths of the performance of a Convair 340 or a Martin 4-0-4 at half the cost.

The R4D-8 gross weight is 31,000 pounds, nearly 6,000 pounds greater than the standard DC-3, but Navy reports that the improved model has a permissible military overload gross of 36,800 pounds. Speed ranges from a top of 270 miles per hour to 225 miles per hour at 60 per cent of normal rated power. Absolute maximum range is more than 3,000 miles, making the DC-3 a possible candidate for the San Francisco-Honolulu run.

One of the primary considerations in Fleet Logistics is supplying aircraft carriers at sea. Sometimes fleet operations have been disrupted to allow supply ships to come along side. Navy is now flying supplies aboard. First the Grumman-designed TBM was used for this purpose, stripped down to bare essentials and capable of carrying seven passengers plus high-priority cargo.

Now the Douglas AD-5, the adaptable carrier attack airplane, is being equipped with a kit which permits on-the-spot modification to a passenger and cargo carrier. In one configuration, the AD-5 is equipped with four plush passenger seats installed in the aft crew compartment. The troop-carrier arrangement has side-by-side bucket seats, five on each side, with additional seats in the bilge. Fifteen passengers and the pilot can be carried in the single-engined airplane.

Mobility

Although Navy spokesmen point out that the bulk of naval logistical support must be provided by surface craft, still airlift to the fleet is a military necessity. Navy relies upon MATS (of which Navy personnel and equipment constitute a considerable part) for basic, predictable, and dependable airlift needs. But as long as the prime characteristic of naval warfare is mobility, as it always has been, Naval Fleet Logistic Air Wings must be properly equipped with the best in airplanes and flying boats to supply a fleet constantly on the move.

Way Cleared for Big Air Coach Expansion

CAB, IATA actions followed by announcements of domestic, international low-fare services.

By WILLIAM V. HENZEY

COMMERCIAL aviation, domestic and international, is now undergoing one of the most revolutionary changes in its short but dynamic history — a switch from a luxury high-cost mode of travel to one the public in general can afford to use. The switch, which affects not only the pricing of air transportation but aircraft types, airports and many other phases of the industry, was put in motion on a big scale by two recent developments.

- **A call from the Civil Aeronautics Board** for expansion of low-cost domestic air coach services with lower fares wherever reasonably possible.
- **Agreement among eleven trans-Atlantic operators** to begin tourist services on May 1, 1952.

In immediate response to CAB's call, United Air Lines, TWA and National Airlines, classified as non-subsidy carriers, proposed immediate cuts in fares for existing coach services. Other lines, including American, were closely studying the new CAB policy and were expected to advance plans momentarily.

New Cities

Many of these are expected to add more coach flights and to include new cities and route segments in their coach operations. Eventual aim is to reverse the present situation and put greatest emphasis on high-density equipment operating at low fares with luxury high-cost services still existent but secondary.

CAB's new policy advocates two types of coach operations: one with fast high-density equipment without scheduling restrictions, the other not limited as to equipment but conducted at so-called "off-peak" hours. Only fare limit set is one requiring "off-peak" operations to be conducted at not more than 4c per passenger-mile.

United's answer to this was a proposed reduction in DC-4 transcontinental coach fares from $110 to the non-scheduled airline fare levels of $88 westbound and $99 eastbound. This was followed by TWA's proposal to cut its fare for high-density Constellation operations from $110 to $99 in either direction.

National, now operating both DC-6's and DC-4's between New York and Miami, plans to cut its DC-4 fare from $53 to $43 and elminate night-time scheduling restrictions. Its DC-6 coach flights are available at a $58 fare.

These are preliminary moves. Much greater expansion of coach services, which for the past three years have been operated under rigid CAB control, can be looked for as the equipment situation of the industry eases. Most new aircraft will be designed to accommodate the greatest number of passengers. And if, as expected, traffic response to widespread coach fares is substantial, additional aircraft beyond present orders may be necessary with a resultant effect on traffic control problems at crowded airports.

Turning Point

It will be months before the full impact of the current drive can be accurately gauged, but there is little doubt that the anticipated transition period in commercial aviation is under way.

Perhaps the most daring move is that of the trans-Atlantic lines who plan large-scale coach operations next spring without an experimental period as was the case in the domestic field. Heretofore, air service between here and Europe has been in the luxury class with reduced rates available during certain seasons.

Now, as a result of the IATA agreement at Nice, France, emphasis will be on high-density equipment with fares attractive enough to lead traffic experts to estimate an increase of about 200,000 trans-Atlantic passengers next year.

The agreement, a compromise affair, was reached by Traffic Conferences 1 and 2 of IATA after eight days of debate. It provides for fares of $270 one-way, $417 round-trip November through March and $486 round-trip April through October. Generally, these are in line with fares advocated by CAB, Pan American and TWA, prior to the meeting.

Big Slash

The new one-way fare, applicable between New York and London, is $125 under the current standard fare. In fact, the reductions are so great that immediately following the agreement, Pan Am and TWA announced European all-expense vacations at prices under standard round-trip air fares.

TWA said all-inclusive tours to England would start as low as $598 covering air fare, lodging, meals and sightseeing. Pan Am plans two-week package vacations at $633 including air fare and food and lodging in England, Belgium, Holland and France. Standard round-trip fare is $711. These package vacations are based on the new coach fare of $486 round-trip.

Among European lines, Air France, British Overseas, KLM Royal Dutch Airlines and SAS announced tentative plans, foremost among which are preparations for having proper equipment available.

Domestic Aircoach Lineup

Following CAB's call for expansion of domestic coach services and lower fares, these proposals, as this issue went to press had been submitted:

UNITED AIR LINES: On January 9, 1952, or earlier if CAB will permit, lower New York-San Francisco DC-4 coach fare from $110 to $88 westbound and $99 eastbound; lower Chicago-San Francisco from $85 to $75 westbound and $79 eastbound; lower Chicago-New York from $35 to $24 applicable in either direction. DC-4's used are equipped to carry 66 passengers.

TRANS WORLD AIRLINES: As soon as CAB approval can be obtained, lower transcontinental fare from $110 to $99 with New York-Los Angeles service provided on 81-passenger Constellations and New York-San Francisco service on 66-passenger DC-4's. Between intermediate points, New York-Chicago will be cut from $35 to $32, and $5 cuts in other fares will find Chicago-Los Angeles at $80, New York-St. Louis at $40, and St. Louis-west coast at $75.

NATIONAL AIRLINES: As soon as CAB will permit, cut New York-Miami DC-4 coach fare from $53 to $43 (about 3½c per mile) and remove night-time restrictions on DC-4 operations. No immediate change in DC-6 operations announced and they will continue at a $58 one-way fare.

WESTERN AIR LINES: On December 10, expanded present service southward to San Diego and Long Beach, Calif., and on January 1, will switch Los Angeles-Seattle DC-4 coach service from a night-time to a daylight operation.

International Coach Picture

Trans-Atlantic coach operations will start May 1, 1952 at New York-London fares of $270 one-way, $417 off-season round-trip and $486 on-season round-trip. Tentative plans of seven of the eleven authorized carriers are summarized below:

	Equipment	Seating	Weekly Frequency
Pan American	DC-6B	82	4
TWA	Constellation	60	7
Air France	Constellation	60	3
BOAC	Constellation	60	3
SABENA	DC-4 or DC-6	..	3
KLM	Constellation	60	2
SAS	DC-6	..	4

Pan Am plans to up its weekly frequency to seven flights; KLM to four or more. SAS will eventually switch from DC-6's to DC-6B's. Trans-Canada, El Al and LAI have not yet indicated their plans.

Hotel people abroad, cognizant of the anticipated increase in tourist business next year as a result of the airlines' move, have started preparations to accommodate increased patronage. With hotels in Paris and London, for example, crowded during the past few years, arrangements were being made for extensive use of smaller hotels and out-of-town resorts.

The impact of this revolutionary development will also be felt in world economic circles. Millions more of American dollars will find their way to Europe with the American taxpayer reaping an eventual benefit through possible reductions in Marshall Plan contributions.

As Tore S. Nilert of Scandinavian Airlines System puts it: "Mr. and Mrs. Average Man will effect a considerable increase in trade, good will and cultural exchange, as well as strengthen European dollar incomes, thus directly assisting in the Continent's recovery and, at the same time, lowering American taxes at home."

Mass Travel

Meanwhile, although the domestic coach expansion and the trans-Atlantic tourist agreement were separate actions, they will result in an overall development of mutual advantages. Foremost is that the airplane, for the first time in history, will be operated in large-scale regularly scheduled services at rates that will not drive away the average man. Thus, with airlines operating on a mass travel basis, equipment manufacturers throughout the world can look to increased demands for aircraft, with obvious benefits to them and their suppliers. Piston-engined aircraft have been dedicated to about ten more years of wide usage. Barring a complete collapse in the nation's economy, it looms as the greatest ten years in airline history.

Non-Skeds May Owe $1 Million in Taxes

Internal Revenue unable to police irregulars who haven't paid 15% transportation levy.

EVIDENCE that the United States Government is owed an estimated "million dollars or more" in Federal transportation taxes which have or should have been collected from passengers by a large number of non-scheduled airlines, was uncovered recently in Washington.

Indications were also that practices which have led to the present deficit resulted in the government's losing a substantial but inestimable amount of such taxes in the past.

No Police Force

Bureau of Internal Revenue, which requires monthly payments of the 15% tax collected from passengers by airlines and ticket agents, is reportedly unable to police the non-sked industry adequately. This plus the fact that Congressional pressure on the Civil Aeronautics Board has minimized effective accounting and ticketing controls over the non-skeds, has resulted in substantial backlogs of unpaid taxes.

One line, New England Air Express, owns only one plane but has a tax liability to the government of $150,000. The non-sked has made a deal with Internal Revenue to pay $3,000 a month until the bill is satisfied. But this will take 50 months to complete and the line faces immediate suspension of operating rights by CAB for alleged "gross mistreatment" of passengers.

On the west coast, three non-skeds owe $200,000 in unpaid transportation taxes and have made a deal to settle at the rate of $2,000 a month. This will take eight years and four months to complete. Government officials said that only through such deals can any settlement be expected.

In New York, for example, the government was stuck for $20,000 when a non-sked could not pay and had no attachable property. Its one aircraft, valuable enough to more than cover the debt, was on lease from the military and could not be attached.

Five Owe $370,000

Thus, the backlog is $370,000 for only five members of an industry — which consists of over 60 carriers. Practices of these five are widespread, government officials say, and while not all non-skeds are involved, a substantial number are.

Much of the non-sked business is handled through small ticket agents who assemble plane loads of passengers without knowledge of the airline on which the passengers will travel or the official tariff fare which an eventually selected airline may charge. This practice, of course, precludes proper collection of taxes since the 15% is applied to the tariff fare.

Under-Manned

Currently, there is no end in sight to the trouble which exists in what amounts to a sort of "no-man's land." Internal Revenue is reportedly too under-manned to keep up with it and, when it finds out what is owed, either faces total loss or settles for small payments on a long-term basis.

CAB has no jurisdiction over tax matters and is being hamstrung on enforcing regulations which might help the situation. Meanwhile, the law requires passengers to pay 15% in addition to fares; in many cases this is being used to enable some non-skeds to undercut competing transportation companies.

Two Domestic Mergers Shaping Up

National-Colonial, West Coast-Empire deals readied for approval of CAB and stockholders.

MERGER negotiations between domestic airline operators produced two tangible possibilities in recent weeks, both of which hinge on Civil Aeronautics Board approval. In New York, Colonial Airlines board of directors accepted a merger offer from National Airlines. On the west coast, an anticipated merger between West Coast Airlines and Empire Air Lines, two local service carriers, took shape when an agreement was signed calling for West Coast to buy up all Empire stock.

Acceptance of National's offer by Colonial's directors came after weeks of heated meetings at which merger proposals from Eastern Air Lines and Northeast Airlines were also considered. The National offer was to exchange seven-eighths of one of its shares of stock for one full share of Colonial. Aside from CAB approval, Colonial stockholders still had to okay it.

$15 for $12

Although a definite agreement had not been drawn up as this issue went to press, there were rough estimates that the stock plan would provide about $15 for every $12 of Colonial stock exchanged. Significantly, following announcements on November 28 that Colonial was considering offers from Eastern and National, its stock jumped from $8.62 to $11.87 per share. It is estimated that the value of the company's stock during that period increased in the neighborhood of $3 million.

Eastern's offer to Colonial, according to unofficial Wall Street reports, was a two-for-one stock deal, reportedly made at a time when an Eastern share, trading for about $25, would have increased the value of a Colonial share by about $3 or $4, if the offer had been accepted.

But the Colonial-National hook-up fits in with one of the two merger possibilities raised by CAB when it instituted its so-called New England-Southern States Merger Investigation. The other would have linked Colonial with Northeast, Delta and portions of Capital.

Since the CAB proceeding is exploratory in nature with the Board powerless to direct any lines to merge, there were indications that the Board would welcome firm merger proposals in order that its investigation could produce tangible results.

Thus, the New England-Southern States Case now has two definite mergers to work with, the Colonial-National pact and a long-standing Delta-Northeast proposal. However, in view of the enormous loose-ends still hanging around, the tail will continue to wag the dog until at least one more merger is worked out — or one eliminated.

Delta and Northeast cannot operate a merged company without a connecting link between their widely-separated route systems. CAB has twice refused to consider a route extension for either carrier. And with Colonial and National proposing creation of a second strong eastern carrier (Montreal to Havana), close observers wonder if CAB will sanction a third strong system such as Delta and Northeast contemplate in generally the same territory.

The shoe of course fits the other foot and the Board may determine, after investigation, that a Delta-Colonial-Northeast-Capital merger may better serve the public interest as the second strong eastern carrier to compete with Eastern Air Lines. In such a case the pending Colonial-National agreement would fall by the wayside.

Community of Interest

Out on the west coast, the West Coast-Empire merger has been jelling for sometime following CAB's refusal to permit West Coast and Southwest Airways to merge. In the Southwest Case, in which CAB ruled that different trade centers should not be joined by local service lines, the Board indicated that a West Coast-Empire deal would be more in line with its current objectives.

On December 6, WCA officials and the stockholders of Empire agreed to a plan under which all 3,380 shares of issued and outstanding Empire stock would be sold to WCA for "an amount equal to the value of the underlying net assets of Empire on the closing date."

Generally, this was estimated to be over a half-million dollars and WCA agreed to pay the Empire stockholders, by December 16, $100,000 in cash and to give a promissory note for $400,000 payable in semi-annual installments of $50,000, with interest at the rate of 5% per annum.

The cash, promissory note and the Empire shares of stock are to be held in escrow pending completion of the deal.

To assure CAB action as early as possible, the two local lines agreed that the contract would terminate on December 31, 1952, or sooner if CAB ruled unfavorably before then on their application.

Another condition to the deal was that current certificates of the two lines be renewed by CAB in substantially their same form plus a connecting link in the general area of Seattle/Portland and Spokane/Walla Walla.

Renewal Pending

WCA's certificate for Route 77 authorizes north-south operations along the upper Pacific Coast between Bellingham, Wash., and Medford, Ore. It expired November 22, 1949, but operations have continued pending a soon-to-be-issued CAB decision on a renewal application.

Empire's certificate for Route 88 authorizes north-south operations between Spokane, Wash., and Idaho Falls, Idaho. It expired December 31, 1950, but operations have likewise continued pending a CAB decision on renewal. This decision is not expected for several months yet.

Both lines have applied to CAB for route extensions which would create one or more common points on the two systems. Empire's certificated route mileage now is 754 miles; West Coast's 885. Merging of the two lines would thus create a pyramid-shaped system of over 1600 miles. Five local service lines exceed that figure now.

Henzey, Saunders Win TWA Writing Awards

Two staff writers for AMERICAN AVIATION Publications have been named among the 15 winners in Trans World Airlines' 14th annual aviation writing and picture competition.

Competing with the largest number of entries received since the contest began in 1937, William V. Henzey, transport editor, and Keith Saunders, legislative editor, took two of the three top awards for writers for aviation trade or technical publications.

Henzey was judged to have written the best business and financial story of the year in this class, while Saunders was chosen for the best sales and promotion story. In addition, Henzey won the sweepstakes award in this class.

Awards will be presented in Phoenix, Ariz., on Jan. 12. Other classes in the competition include large and small newspapers, magazines of general interest, and photography.

AMERICAN AVIATION has won one or more awards in each of the 14 TWA competitions.

Interview—with PETER G. MASEFIELD

Chief Executive, British European Airways

As chief executive of British European Airways, Peter Gordon Masefield directs the activities of an airline which operates 115 aircraft over 17,032 route miles extending into 18 countries. During the past year his airline introduced the first scheduled passenger helicopter service and later the first turboprop aircraft to be used in regular scheduled passenger service. BEA's fleet of 45 Vikings, 44 Douglas DC-3's (in many configurations including two turboprop-powered models), and 20 de Havilland DH 89A's will be supplemented by 20 Airspeed Ambassadors, 20 Vickers Viscounts and 7 Handley Page Marathons.

Since Masefield joined BEA as assistant to the Chairman in January 1949, the company has shown consistent improvement. In the fiscal 1950-51 year BEA operated 21.2 million aircraft miles, producing 266.6 million revenue passenger-miles, 3.9 million freight ton-miles and 2.2 million mail ton-miles. Traffic was up 23% and cost per ton-mile down 8%. Traffic continues to increase at a fast pace and the outlook for profitable operations is very promising.

Masefield, 37, received his engineering training at Cambridge University and later his M.A. Engineering Degree after graduating from the Institute of Mechanical Engineers. His first industry job was with Fairey Aviation Co. on the design staff, followed by a position as assistant technical editor on *The Aeroplane*. In 1943, after serving as war correspondent with the Royal Air Force and the U. S. Army's 8th Air Force and qualifying as co-pilot and air gunner on the B-17, Masefield toured the U. S. aircraft industry and military bases lecturing on joint RAF-USAAF cooperation at the invitation of General "Hap" Arnold.

After serving in a succession of postwar aviation positions in the British government, he was appointed as first Civil Air Attaché at the British Embassy in Washington, D. C. in July 1945. Leaving this position in November of 1946, Masefield became Director General of Long Term Planning and Projects for the Ministry of Civil Aviation.

BEA's Progress and Plans

Q. Is British European Airways passenger helicopter operation proving successful economically?

A. It depends on what you call "successful economically." It is not paying for itself. But then we never even contemplated it would because it is purely a research project done for the purpose of establishing—

(a) the maintenance characteristics of the type.
(b) the problems of introducing helicopters into a very busy control zone, such as London.
(c) the radio aids needed for scheduled helicopter services.
(d) passenger reactions.
(e) the problems inherent in a specialized "rotor station," established first at Birmingham.

Special Grant

Q. Since you say it was not intended to be a profitable operation, would you give us an idea of the relationship of the revenue to the expense of the operation?

A. The revenue is only about five per cent of the expense—as is inevitable from a three-passenger helicopter operated at standard fares. We have a special experimental grant from the Ministry of Civil Aviation and the Ministry of Supply which covers some—though not all—of the operating costs. The grant is about £80,000 ($224,000) for this year, during which we shall be flying about 1,850 helicopter hours.

Q. Has the operation established in your mind a tentative specification for a more useful helicopter? If so, what are the general requirements of such a craft?

A. Yes, it has. We are now circulating to the Industry our "Outline Specification of Requirements for a large Helicopter for Passengers, Mail and Freight on B.E.A. Scheduled Air Services."

Q. What do you feel must be the size of the helicopter to be economical to operate?

A. We specify that the design capacity should be not less than 30 seats over a 100-mile stage and the machine must be capable of development up to 45 seats over 200 miles. That is the size which we believe is necessary for an economic commercial proposition. We do not think we are going to get it quickly but we hope that development can begin before too long.

Q. Do you specify single or double rotor?

A. We are leaving that to the manufacturers, but we specify a multi-engined helicopter.

Two Rotors Favored

Q. The U. S. appears to be moving toward large twin-engined helicopters with only one rotor assembly. Do you favor such a configuration?

A. One rotor is O.K. if you can get away with it. There is less to go wrong than with two. But I should have thought the trend at the moment is towards two rotors. We shall know more about that when we have our hands on the twin-engined, twin-rotor Bristol 173. However, Mr. O. L. L. Fitzwilliam has recently lectured before the British Helicopter Association on "The Giant Helicopter" and he is specifying a helicopter of about 504,000 lb. gross weight on one rotor. It seems a little ambitious!

"... Reaction to turboprops has been very favorable"

Q. What do you see as the real place of the helicopter in airline operation? What range is required? Do you feel the downtown helicopter station is feasible with the present state of helicopter development?

A. Our plans for the helicopter are for internal domestic air services in the United Kingdom from city centre to city centre such as between London and Birmingham, Manchester, Liverpool, Newcastle and Edinburgh. Eventually the helicopter will appear, I think, on the London-Paris and other short-haul cross-Channel services up to a distance of about 250 miles. But you must have two engines, or more, to go into city centres.

Q. What will affect the London-Paris operation?

A. Big enough helicopters of sufficient passenger attraction and speed to do the journey from the centre of Paris to the centre of London. I hope a large helicopter would be able to fly from central London to central Paris in an hour and a half which is the same time as is taken in getting to and from the airports by surface transport at present.

Until we have a satisfactory twin-engined helicopter we will not operate into city centres.

Q. Has B.E.A.'s helicopter operation proved the need for special navigation and traffic control equipment for this type of unit?

A. Yes, I think it has. We feel that regardless of what is the eventual answer as the fixed-wing precise navigational aid, the Decca system is right for the helicopter because it is accurate right down to ground level and we can fly in on the Decca underneath the ordinary air control pattern.

Q. What do you see as the most promising helicopter now under development?

A. In Great Britain the Bristol 173. In the U. S. A. a development which we shall watch with interest is the Piasecki H-16. We do not know much about it yet, however.

Q. What do you see as the most critical test facing the helicopter?

A. The establishment of satisfactory stability, control and one-engine-out performance combined with an adequate life between overhaul of the various moving parts. Then, of course, the powerplant problem has to be resolved—shall the rotors be twiddled from the middle or from the tips—and by what type of powerplant?

Q. As the first airline to use turboprop-powered transports in scheduled services, what has been BEA's findings?—specifically, on (a) passenger reaction, (b) control problems, (c) reliability, (d) fueling problems and (e) noise.

A. **(a) Passenger reaction** to the V.630 (Viscount prototype) during our limited amount of scheduled passenger flying with it so far, has been very favorable indeed, commenting firstly, I think, on the low vibration, then on the low noise level and next on a matter which is not at all to do with the engine but a characteristic of the Viscount airframe,—the extraordinary big windows.

Hold on Two Engines

(b) Air Traffic Control problems. We have developed a technique which has reduced control problems to small proportions for the moment, while there are relatively few turbine operations, by holding on two engines, thereby cutting the fuel consumption in a stack by a vital 20%.

(c) Reliability. Only on one occasion on the London/Paris run did we not operate on schedule, because of the failure of a hydraulic fluid pipe. In all we operated 138 hours in 26 days with one aeroplane on scheduled service carrying passengers—but we have, of course, done a good deal more flying on trials.

(d) Fueling problems. We made arrangements with the fuel companies and they laid down supplies of kerosene for us. There was no problem.

(e) Noise level, in the cabin is very low—in fact, the lowest of any aeroplane we know. On the apron outside the aeroplane the noise on taxiing is very high within a narrow cone, and at a particular throttle setting when starting up and moving off. It is a problem which must be solved.

Q. Do you get any complaints from the surrounding area?

A. No. We are operating two Dart Dakotas at the moment and we have have had no; complaints.

Q. Since you are operating Dakotas with Dart engines, what are your views for making the operation permanent?

A. The Dart Dakota is not a really economic aeroplane. It is first of all a twin-engined machine so it does not enjoy the holding advantages of the four-engine layout and has to carry proportionately more fuel.

Secondly the engines are rather high powered for the airframe giving 1,450 hp each instead of the 1,200 hp of the DC-3's normal engines.

Thirdly it must be operated at height to gain economy and there is no pressurization so the crew must use oxygen. At heights below 10,000 feet the fuel consumption is too high for satisfactory commercial results.

Experimental Only

Fourthly. There is a payload restriction on short-haul routes because the engines are so light that we have a no-fuel limit on wing bending moment. For all these reasons the Dart-Dakota cannot be other than experimental and a flying test bed on which freight can be carried.

Q. What do you see as the minimum economic flight leg for a turboprop aircraft?

A. To be really effective, about 400 miles, but we could use the Discovery Class (Viscount V.701) on Paris not quite as cheaply as our Elizabethan Class. If later on we got a bit more volume in the fuselage it would be better. For the Discovery Class it is a question of volumetric capacity on short routes. In any case the technique is to climb as high as possible whatever the stage.

Q. The turbo-propeller operation would seem rather marginal within Europe.

A. No. On our BEA routes those to the Mediterranean are ideal for the Discovery; routes such as to Rome and Athens. Also London to Barcelona, Madrid, Copenhagen, Stockholm, Oslo, Switzerland—in fact all except the very short cross-Channel routes.

Q. What do you feel will be the break-even load factor of the Discovery (Viscount) on a route such as London-Paris?

A. It depends how costs go up—the way wages and materials costs increase. But London-Paris will be a higher break-even load factor than, say, London-Nice. Even so somewhere around 60 to 64% should be adequate at contemplated fares.

Q. What fuel is BEA using in the Discovery (Viscount) and has it in practice proved less expensive than high-octane aviation fuel?

A. At present the price per gallon of kerosene is way down on gasoline—about 50%, although, compared with the piston-engined aircraft, we are using more pounds weight of fuel per horse power hour.

Q. Have you had time to compare the earning potential and costs of the Viscount with that of the Convair Turbo liner?

A. No, we have not. But we would feel that the Turbo liner would be somewhat handicapped by having only two engines.

Q. Does BEA plan to overhaul its own turboprop engines

in the foreseeable future?

A. We are working that out with Rolls-Royce at the moment on the basis of which will be the most economical way to go about it.

Q. What period do you feel you will get on the turbine engines initially?

A. We have got 250 hours at the moment on the Darts in the Dakotas. We hope to be up to 500 when we start operating with Discoverys and we hope to get to 1,000 quite quickly.

Q. What is your reaction to tourist fares in Europe?

A. They are going to come. They will obviously mean a tremendous upsurge in traffic as soon as we have enough aircraft of the right types to handle the loads.

Q. How long do you feel it will be before equipment will meet the demand?

A. Not next year, so far as we are concerned because we can fill everything we can get at existing fares in the Summer. It depends how things go—it may be in 1953 or in 1954.

Q. Have you any studies as to what degree of increase in traffic you might expect?

A. We reckon a steady increase of between 20% and 30% per annum for quite a time.

Q. What fare differential are you planning on?

A. Somewhere between 20% and 25%. But it will be up to IATA to decide as a body.

Leans Toward Decca

Q. As a major European operator how do you look on the Decca-VOR controversy?

A. We are in favor of Decca because we think it is cheaper and lighter, no less accurate and convenient and it is certainly more satisfactory for the helicopter. If the same apparatus can be used on the fixed-wing aircraft as on the helicopter it makes our equipment position easier. On the other hand, we would not wish to be the only airline using Decca, because of the limited amount of aviation equipment which would then be available. So far as we can see, as an aid in the air, there is nothing to choose between Decca and VOR plus adequate DME provided the VOR-DME has adequate pictorial presentation, as in the Decca Flight Log.

Q. What are the major shortcomings of landing and traffic control aids in Europe?

A. Lack of aids. Not enough installations in the right places and lack of an integrated European system.

Q. Do you foresee any co-ordinated program to get more aids?

A. Yes, but one of our problems is the very big delay on all deliveries.

Q. What do you see as the major effect of the new government on British airline operations?

A. There is no defined trend visible at the moment. We shall have to wait and see. What we try to do is to keep our eye on our job of trying to provide the best and most economic air transport within our power and our equipment position. We feel that air transport is a technical, a commercial and a transport business rather than a political issue.

Q. Will it see BEA subletting more internal and local services to private contractors?

A. Possibly there may be evolved the equivalent of the CAB for British routes. Shortage of modern transport aircraft is, of course, one of the difficulties of the present day for everybody, and we shall certainly scream like hell if anyone tries to pinch any of our aircraft. We shall need everything we have got for the development of tourist class traffic in the future.

Q. It has been indicated that the Ministry of Civil Aviation may be abolished and incorporated in the Ministry of Transport. Is this likely and if so what is its possible effect?

A. That is a fairly leading question, and, as I have said, our part is not to concern ourselves with politics—but to get on with our job. My own personal view is that air transport is worthy of government recognition in its own right and that it has little affinity with canal barges, street cars and omnibusses. Air transport is also going to give other forms of transport some competitive headaches before too long. So we want air transport to be free to compete with them. That will undoubtedly produce the best service for the public.

Peaks and Valleys

Q. Has BEA found an effective and economical way of leveling out the large seasonal and week-end fluctuation in traffic?

A. No. It is our continuous problem today. We have eased it by differential fares but it remains one of our biggest headaches. In fact, we can make a profit over eight months of the year now in BEA and, of course, later on with newer types of aircraft we shall make profits all through the year. But at the moment during the four winter months of the year, we lose all we make in the summer and a lot more besides. Traffic falls to less than half. On the very peaky Channel Islands routes we have a mid-week fare which is a substantial reduction on the week-end fare. It has helped to spread the load quite a lot, but those routes are still very seasonal. In fact, on the Channel Islands services we carry just about half of our year's traffic of 200,000 passengers to the Islands on thirteen peak week-ends.

Q. On the routes within Europe, relatively short routes, is added cruising speed a practical and salable item? Do you see any tangible effect coming from the increased speed of the Discovery Class?

A. Yes. We have been through it in the other way already, comparing the Viking against the Convair, the Convair being the faster. When we have a much faster aeroplane than any yet flying on short routes, I think it will have a big effect.

Q. What effect do you feel coach fares on the North Atlantic will have on BEA's traffic?

A. I think it will improve our traffic a lot. The more people fly across the Atlantic the more people are likely to fly BEA. We give connections from London to every major city in Europe and the U. K. and among our million passengers a year we already carry a great many Americans—in fact, many more than any other European airline.

Q. Does BEA feel it is adequately equipped to handle any appreciable increase brought about by coach fares?

A. We are going to need all the new aircraft we have on order plus all the Vikings and Pionairs we have now. We shall not be able to retire any of our Vikings for some time to come. They will be used for Tourist class with "high-density" seating.

Q. Is BEA's government help in the form of outright subsidy or is it all included in mail rates?

A. Our mail rate for our overseas services is below that of any international carrier—while our internal mail rate is even lower still. What we have in a grant making up the deficit which we hope to eliminate quite shortly. The grant is based on an estimate and program put in be-

fore the year starts. Fortunately every year recently we have beaten the estimate. Last year our deficit was £979,267 including a figure of £500,000 on "social services" around the Highlands and Islands and £200,000 paid in fuel tax. In the past two years we have doubled the traffic and reduced the deficit to one-third of the figure in fiscal 1948-49.

Q. Can the government subsidy be eliminated in the future, and if so what is the major factor which might help?

A. We could set out a statement of "How to Make BEA Pay in 24 Hours." The first thing would be to eliminate fuel tax which we pay on our domestic services at a rate higher than any other airline of which we know. Secondly, we receive the full international rate for the mail which we carry and thirdly to receive a charter rate, or additional mail pay, for the social services we operate to Government requirements as public interest services.

Q. What do you consider a "social service"?

A. A "social service" is a flight which we should not operate for normal commercial reasons, but is maintained to provide an essential service for an isolated community. Such services are those to the Scottish Isles—little islands inhabited by only a few crofters for whom flying is the only regular means of communication.

Q. Is the government absorbing part of the costs of introducing the Discovery (Viscount) and Elizabethans (Ambassadors) into service? How is this handled?

A. No, they are not. We pay for the aeroplanes at the ordinary rate that any airline pays and we also pay on top of that a figure to the Ministry of Supply whereby they re-coup the money spent in ordering prototypes in the first place.

Q. What was the major factor delaying the introduction of the Elizabethan fleet?

A. Radio. Interference from the electrical system of the aircraft. The trouble is practically solved now and we hope to get the aeroplane back on to service in December.

Q. BEA appears to be committed to quite a variety of aircraft and engine types. What is the possibility of BEA's equipment program settling down to one or two types?

A. We propose to standardize on the Dart engine, so far as we can. Eventually we shall come to two major types—the Elizabethan and the Discovery. But with the upsurge of the traffic we will not reach that very early, because the older types will have to remain on in service.

Q. Britain has often been accused of being too busy modifying its transport fleet to ever stabilize long enough to make money. What is your reaction to this?

A. We have not had any really economic transport aeroplanes yet. We now have the new types just coming in—the Elizabethan, the Discovery, the Comet and the Bristol 175, and I hope we shall be able to stabilize—and develop—them.

Equipment Shortages

Q. As one of the chief planners of trends in postwar airline operation, what happenings since 1945 might have altered your view of this period?

A. I doubt if anything has altered in my view radically except that the procurement of aeroplanes has been more difficult and slower than was foreseen. This has been caused largely by the amount of military work which the aircraft industry is having to undertake as a vital and essential contribution to Western defense.

Q. What do you consider to be the major mistakes made by the world's airlines in the postwar period?

A. As a generality I think probably they have not thought big enough. If we had thought in terms of more and bigger aircraft earlier, then we should be a lot better off today. We should have no difficulty in operating 65- to 70-passenger aircraft on short haul services today instead of the 40- and 50-passenger aircraft now coming into service. What we want for a particular type of route in BEA is not such a big aeroplane as the DC-6B or the Super Constellation but an aeroplane that will take as many passengers over medium stages. In the moderate sizes of aircraft, a cardinal mistake has been, I think, the failure of the World airlines to get together and make up their minds on their requirements for a DC-3 replacement.

No Competition

Q. How do you account for the apparent coolness of U.S. operators towards turbine-powered aircraft?

A. I think they are doing very nicely on what they have got and possibly do not want to be too adventurous too early, I suppose. I do not think that they are being short sighted—but only looking at the business in a strictly commercial sense. Until somebody jumps in with a jet aeroplane on competitive routes the Super-Constellation and DC-6B ought to haul the traffic nicely at a profit. Over here we must be bolder because we have not got DC-6Bs and Super-Constellations. We must miss out on that stage and try to catch up on the next.

Q. When do you feel the U.S. operators will first feel the competitive pressure from turbine transports and where will this come about?

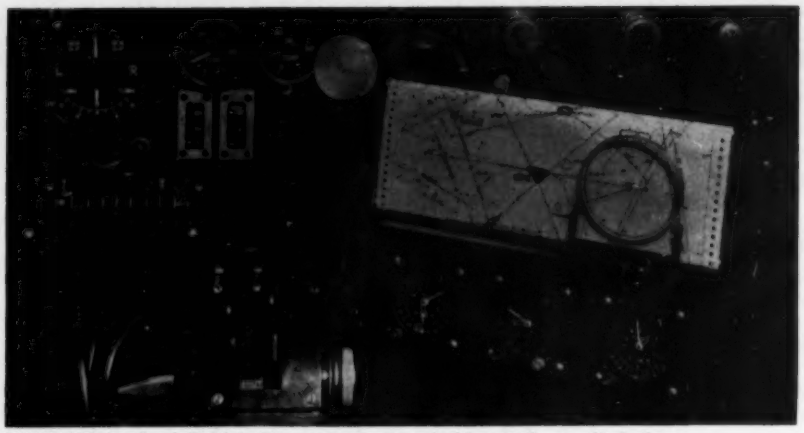
A. I should think probably during 1953 on some of the routes on which the U.S. airlines are carrying a good deal of fifth freedom traffic, both inside Europe and on long stages from Europe to the East. Pan-American and T.W.A. do very nicely hopping along from Europe to the East picking up people at different points. When we have operating over similar stages, aircraft like the Comet and Viscount—then possibly the piston types will not pick up quite so much. It's going to be very interesting. Then, of course, I understand BOAC has plans for New York-Bermuda with the Comet. That should put the Comet among the Stratocruisers.

Q. Is it likely that British manufacturers will rest on the laurels of the Comet as the U.K.'s major jet transport during the next five years, or do you see a more advanced jet in the 600 mph class as an active British project in this period?

A. I hope the British manufacturers will **not** rest on their laurels. On the other hand the British aircraft industry is tied up completely with the rearmament program at the moment and it is going to be very difficult for them to produce a new civil jet aircraft quickly. One trouble I think today is we have got aircraft which can lead the world in a number of classes and we cannot produce them quickly enough. If we could build in big enough numbers and quickly enough now we could sell to the whole of Europe—and outside Europe too. But there is not enough production to do it. The aircraft manufacturers are so heavily occupied—and inevitably—with military orders.

Q. Do you think that will prevent them from taking commercial orders?

A. I hope that somehow we shall find capacity to produce more commercial aircraft. Orders will, I am sure, start pouring in when the Comet, the Viscount and the Bristol 175 start everyday service. I hope that the British industry can somehow get into a position to be able to quote deliveries within a reasonable period. Indeed, as I see it, we've got to do so as an essential part of our export needs to fill the dollar/sterling gap.



DISPLAY head of British Decca system can hold a 20-foot rolled chart.

British Want U. S. Tests for New Decca

Proponents claim best proof of revised navigation system is trial operation in this country.

By WILLIAM D. PERREAULT

IN RECENT weeks the British Ministry of Civil Aviation has been demonstrating an improved type of Decca, a short-to-medium-range navigation system suitable for aircraft use and the principal competitor of the U. S.-sponsored, ICAO-adopted VOR omnirange system.

Virtually all of the European airline operators, as well as the Technical Committee of the International Air Transport Association, have taken the opportunity to test-fly the new Decca with Flight Log as installed in a four-engined Marathon aircraft (see photo).

VOR Competitor

General impression of those who have flown the new equipment, designated the Mark VII Flight Log, is that it corrects many of the shortcomings of the earlier marine and air installation and, if it proves technically sound, will offer competition to VOR in European countries.

The U. S. has an important interest in this matter. U. S. airlines operating internationally are anxious that one set of navigation equipment serve their needs at home and abroad. CAA, carrying out the U. S.-ICAO stand, has made a diligent and not unsuccessful (AMERICAN AVIATION, Oct. 15) effort to sell foreign operators on the VOR system. With the old Decca this was not too difficult a job, but the improved Flight Log version and related technical improvements may alter this situation.

Decca Navigator System, Inc. of Delaware, a wholly owned subsidiary of Britain's Decca Navigator Co. Ltd., intends to push this improvement both on continental Europe and in the U. S. In promotion of Decca in the U. S. the company has, in the past three months, "made a particularly vigorous attempt" to gain U. S. government approval of a trial Decca installation in New York. Four prototypes have already been built, and production is expected by July, 1952.

Decca officials have indicated their willingness to provide complete equipment, manpower and operating personnel free of charge for a temporary or long-range installation in New York. Land sites for three of the four stations which would make up one chain have already been acquired. Total cost of the installation would be $400,000.

Either the U. S. Coast Guard or the Civil Aeronautics Administration could authorize the trial installation, which in this instance would provide marine navigation guidance in New York harbor, cover La Guardia Field, Idlewild, Floyd Bennett Field, Newark Airport and Teterboro. It would also cover the Philadelphia-Camden area, all of Connecticut and Long Island Sound and as far seaward as Block Island.

U.S. Personnel

In weighing the U. S. position relative to local testing of Decca, it is important to realize that authorization for such tests is tantamount to a kind of sponsorship because the U. S. would have to provide operational personnel, even if paid for by the British, since aliens cannot operate a station. Further, the U. S. has only recently covered the U. S. with VOR stations numbering over 400, a multi-million dollar project, and its airlines and civil operators are well on the way toward universal airborne use of the system.

The U. S. is also committed to a VHF system of navigation as a practical matter. Technicians and operators alike are certain that electrical disturbances cannot be kept out of HF navigation equipment and that this cannot be tolerated in short range navigation and related traffic control equipment. Finally, the Decca system is privately owned, involves the purchase of equipment or continuing use fees hardly suitable for a long range U. S. system.

Consequently both CAA and the Coast Guard have now turned down this offer. Since the Decca companies are controlled by aliens they cannot operate the equipment privately even if frequencies were made available to them.

A campaign will soon be started within the U. S., among airlines, marine interests, military and top government officials, to press for a U. S. test of Decca. Groups with keen interests, either from an operational or purely economic aspect, will be made aware of the Decca system and the apparent unwillingness of the U. S. authorities to evaluate this equipment.

Essentially, Decca Navigator System consists of four transmitter stations located in a star-like pattern 70 to 100 miles apart. These are identified as the master station (located in the center) and the red, green and blue slave stations located radially around the master. The stations operate on 70 to 120 kilocycles. The station antennae are 325 feet high, operate at 400 watts power.

Highly Accurate

These stations emit hyperbolic position lines which form a grid pattern over the area covered. One such chain has a range of 250 to 300 miles with accuracy within one half-mile 95% of the time. Some 280,000 square miles are covered by one chain. Decca's biggest single proved claim is its accuracy. Baseline (direct line between two stations) accuracy is within 20 feet. A New York area installation of Decca would permit a large ocean-going vessel to enter New York Harbor and sail up the North River under conditions of heavy fog when ships would otherwise experience long delays.

The output of these stations is picked up by receivers in the airplane. Signals from each of the three stations are displayed on one of three Decometers in the cockpit. Here they simply appear as numbers on an instrument face. The pilot uses the numbers on a reference chart overlaid with grid lines equivalent to the hyperbolic position lines transmitted over the charted area by the ground stations. By tracing two intersecting lines, as designated by the Decometer numbers, the pilot is able to locate his exact position on the map. This is very similar to the system used with long-range Loran equipment.

Because of possible ambiguities in the Decometer readings an additional in-

strument known as a lane identifier is included in early equipment. Once a minute the master station sends out an ambiguity signal which appears on this instrument as a color-coded number. Initially the pilot sets the whole numbers taken from the lane identifier onto each of the respective instruments giving the system a starting point.

As described here Decca is a rather bulky and time-consuming navigation device. The Decometers and lane identifier dials represent four large instrument dials which must be within ready view of the pilots. Each reading means cross-checking dial numbers with map graphs.

The Decca Flight Log, however, eliminates this condition. Decca Flight Log is almost identical in appearance and purpose to CAA's VOR/DME-operated Pictorial Computers now undergoing development and test. In the cockpit (see photo) the pilot has a small (10 x 4 inches) map holder in which a strip roll map of the track being flown is carried.

The Decometers still exist but have been reduced in size to 2½-inch face diameter and the lane identifier has been eliminated by integrating its functions into each individual Decometer. The Decometers are used to double check map readings, set the map unit to a starting position, and periodically during flight.

Flight Path Traced

Using readings taken from the Decometers, the pilot positions a small "bug" over his starting point on the map. From then on the "bug" traces the plane's path over the chart, either on the ground or in the air. To do this, signals from the Decca receiver, which actuate the Decometers, are given torque-amplification adequate to drive the stylus across the chart or to rotate the chart under the stylus, depending on the direction of aircraft movement.

The display head, as the unit containing the chart is called, can take a 20-foot rolled map. It is arranged to handle any of 16 different gear ratios corresponding with various scales on the maps used. Maps of varying scales (specially suited to the airport area, stacking area, en route section, etc.) can be used in a single roll. At present it is necessary to manually change the drive mechanism to convert from one scale map to the other. Ultimately this will be done automatically by edge coding or some similar method. It is also necessary to reset station relationships on a series of nine knobs at frequent intervals.

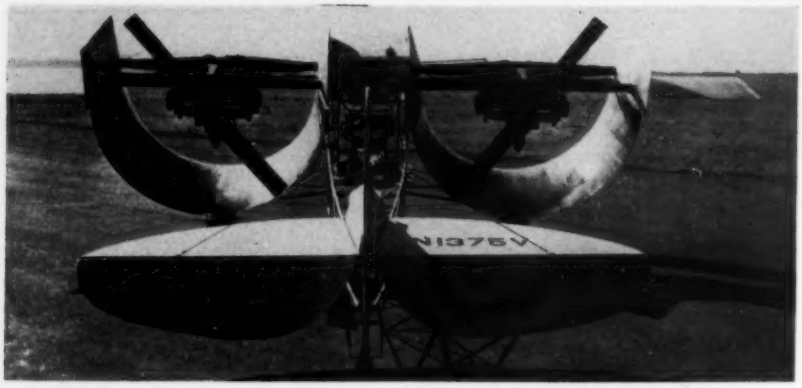
The charts can contain any desired information, i.e., airways, ranges, holding patterns, airport layouts, etc. The pilot needs only to fly the aircraft to keep the stylus needle on the desired course visually presented before him in the display head. At fixed intervals of two or six minutes, the stylus makes a small off-center ring on the course which is helpful in gauging flight progress.

Decca Answers Its Critics

Despite its improvements, many of this country's objections to Decca's nine-channel Mark VII unit may still be valid. Only long and thorough technical evaluation can determine the relative merits of the U. S. claims as to Decca's shortcomings and its proponents' claims that these shortcomings are insignificant or have been circumvented. Some of the more telling claims and counterclaims follow:

ICAO*—Frequencies in the 70 to 130 kc band have not been allocated to this service on a worldwide basis; the relationship of useful service range to interference range rules against its use in this manner. The need for harmonically related radio frequency channels further limits the system.	**Decca—These frequencies are available throughout the world for fixed and maritime moble service. 90 to 110 kc is also available for radio navigation on a worldwide basis. Except in Region II, covering North and South America, the entire range is open to radio navigation.**
ICAO*—70 to 130 kc transmissions produce interference signals up to 3,000 miles, preventing reuse of these frequencies. Decca operation is susceptible to reduced performance because of interference of ground and sky wave signals.	**Decca—Effect of sky and ground wave interference is taken into consideration in establishing the 250 to 300-mile useful Decca range. Most radio transmissions, particularly at high altitude, have greater interference than useful range.**
ICAO*—Because of precipitation noise and static in the LF band, particularly in areas of high radio noise level, only VHF equipment is suitable to provide continuous and effective coverage.	**Decca—Recognizing inherent problem of high noise level areas Decca's new equipment circumvents it. By using wider lanes and new mathematical relationships in the receiver, plus a flywheel which moves the stylus in the initial direction during temporary interruptions, the current equipment is virtually unaffected. An improved static elimination antenna has also helped cure this problem.**
ICAO*—Decca's hyperbolic charts distort the pictorial display, present cockpit lighting problems and cannot accommodate changes in flight plan outside the scaled charts.	**Decca—An improved method of integrating signals from the multiple stations sharply reduces distortion. Only gross variations in flight plans would take the plane out of the chart's range; even then, the Decometers and general maps would still permit suitable fixes.**
ICAO*—At speeds above 200 knots, operational stability of the decometers has not been adequately demonstrated.	**Decca—Such experience has now been accumulated and, in any event, the proposed ICAO tests would establish this characteristic.**
ICAO*—Decca does not offer economic and operational advantages of simultaneous navigation and communication services on one piece of equipment.	**Decca—Ignoring economic factors it might be more desirable to have separate equipment for these two functions.**
ICAO*—Single-site VOR has obvious advantages over multiple-site hyperbolic systems.	**Decca—Decca's four-transmitter chain covers area equivalent to that covered by four VOR transmitters.**
ICAO*—Weight and bulk of Decca equipment limit its use to heavy transport aircraft, offering no service to light and medium aircraft.	**Decca—The 3.2 cubic feet space used by Decca and the 120 pounds total weight (including flight log) is not too much for medium size planes but is for light planes. Transport aircraft deserve the advantages this weight and size make possible.**

*ICAO as used here represents position taken by the United States at ICAO meetings.



AIRSTREAM pulled by prop over Custer Channel Wing provides static lift.

Custer Fixed Wing Gives Vertical Lift

AF reported interested in novel design which features slow-flight, steep-climb channel wing.

WILLARD R. CUSTER, president of Custer Channel Wing Corp. and developer of a fixed-wing aircraft capable of rising vertically, has announced that his company has entered into a licensing agreement with Taylorcraft, Inc. to manufacture military and private airplanes based on his channel-wing invention.

Straight Up

After a recent press demonstration at which the channel-wing experimental aircraft rose vertically from the ground, Custer compared the occasion to the Wright brothers' first flight at Kitty Hawk. He claims that an airplane with his wing is capable of:

- **Taking off in a few feet** or rising vertically.
- **Attaining forward speeds** in excess of those of conventional aircraft.
- **Slowing down, then hovering** in mid-air and landing vertically.
- **Increasing present payloads** and flight ranges.

Air Force is said to be "greatly interested" not only in aircraft Taylorcraft will build but also in the wing design itself. Although there has been no Air Force confirmation, trade rumors persist that the AF is conducting its own experiments with the wing.

Taylorcraft is now launching a program of investigation into the wing's application to a lightplane with very slow landing and takeoff speeds. The company believes that such an aircraft will find broad markets with the military as a liaison plane and with civil light and executive plane buyers.

Same Principle

The Custer wing is formed like half a barrel split lengthwise with the staves shaped like an airfoil (see cut). The aerodynamic principle on which it operates is basically the same as that of other fixed-wing aircraft. Difference is that a conventional plane obtains lift by means of its rapid motion through the air. The airstream passing over the airfoil creates a reduced pressure on top of the wing, which is pushed by the greater pressure underneath so that the wing rises to fill the partial vacuum.

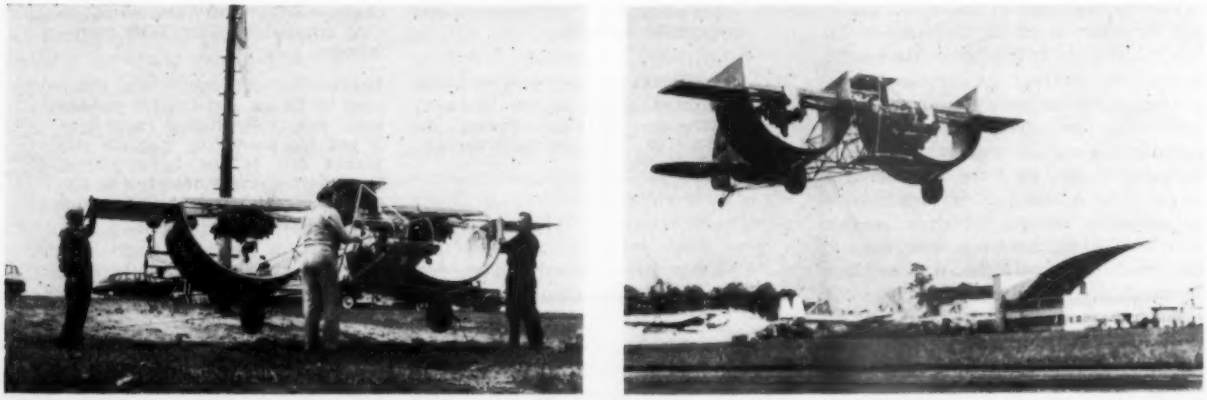
Static Lift

Instead of moving his craft rapidly through the air, Custer moves the air rapidly over his unconventional wing. Speeding airstream causes a pressure drop on top of the wing, as in a conventional wing, and the airplane rises. Since no forward speed is necessary, it is possible that total static lift could occur, i.e., the fixed-wing plane could rise vertically, hover, and land vertically.

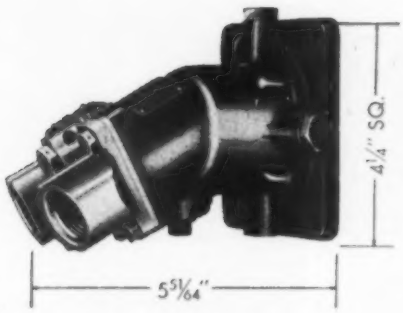
The Custer experimental plane recently demonstrated at Pittsburgh's Allegheny County Airport is, according to its builder, only a rough model built to demonstrate potentiality of the new type of wing configuration. But the arrangement of the venturi-shaped wing, with the propeller located at the trailing edge and sucking air at a high rate over the airfoil, reveals Custer's aerodynamic principle. The experimental aircraft will not rise vertically; further development now undertaken by the Taylorcraft, on which the ground work has been done by the Custer Corp., is necessary before this can be accomplished. But by anchoring the nose of the aircraft to a pole behind the plane (see cut) and thus cancelling out the forward component of force, Custer was able to show that his plane will rise vertically a few feet.

It was obvious to observers that had the experimental craft not been tied down, it would have taken off after a short run at a very steep angle, probably around 30 degrees. Vertical static lift is not possible with this plane because there are two propulsive forces acting on it: (1) the lift of the channel wing caused by the rush of air over its surface, and (2) forward thrust provided by the two propellers.

But it is Custer's belief that almost



WITH THRUST cancelled out by tying plane to post, it still rises (left); in free flight (right), take off run is short.



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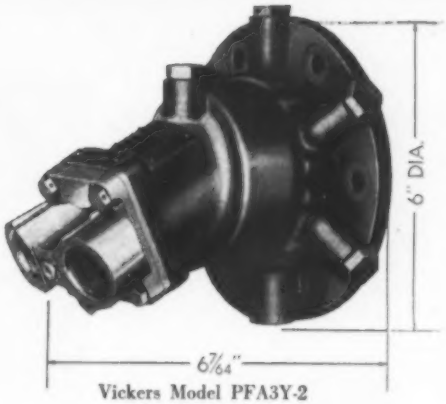

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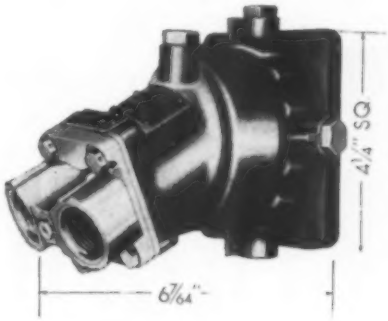

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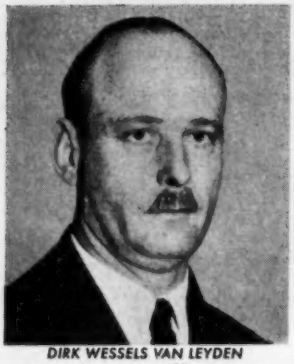

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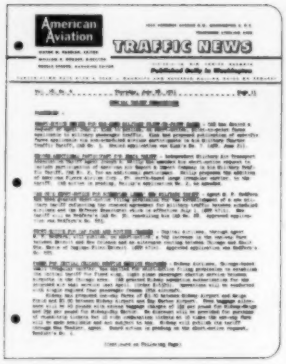
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vertical lift can be obtained by use of his wing, if the wing and engines are tilted upward at a slight angle. The forward thrust will be at the same angle from the horizontal as the props and wings are tilted; the lift from the channel wing will be, to the same degree, *backward* of vertical. Thus, the resultant of the two forces will be "almost vertical."

High Speeds

Since any type of airfoil section can be built into the channel configuration, Custer Corp. claims that forward speeds equal to or higher than those of conventional aircraft can be attained by a Custer airplane. Custer foresees the day when airliners with speeds comparable to those of today will carry passengers and freight across the country, landing and taking off almost vertically. "How long can runways get?" Custer asks. "We can't keep lengthening them forever."

National Advisory Committee for Aeronautics has recently accelerated an investigation into possibilities inherent in the principle of boundary layer control, i.e., control of the velocity of the air over an airfoil.

It has been suggested that this layer of air could be controlled by a strong pump operating within the fuselage of an aircraft, drawing air at a high rate over the wing through ducts or slots (AMERICAN AVIATION, Oct. 1.)

Applied to Jets

Custer believes that a conventional turbojet engine is ideal as a powerful pump for this application. He points out that both blowing and sucking over an airfoil produce the same results: regardless of the direction of the air, it creates lift, so long as the wing's leading edge is hit first by the airstream.

Custer envisions a "wingless" airplane using this principle. He points out that a channel airfoil could be installed in the vent at the intake end of a turbojet. Air sucked over it by the engine would provide lift. Likewise, he would install a second channel wing at the jet's outlet over which the exhausted air, thrust out of the engine at a high rate, would flow, thus in addition producing additional lift.

Such a craft, he points out, need have only rudimentary conventional wings. It could be equipped with "flippers" for added lateral stability. He believes that this plane could almost hover, or if not, it could land at extremely low speeds, with the result that aircraft carriers would become a thing of the past or their design could be radically altered to allow for shorter flight decks.

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- Radio Quiet
- Single-piece Inserts
- Vibration-proof
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- High Insulation Resistance
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- Fewer Parts than any other Connector
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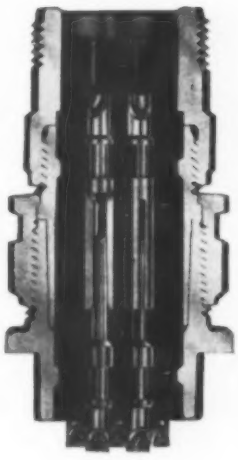

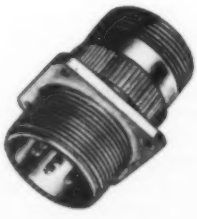

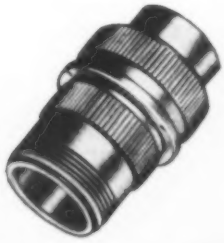

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ARC Type 11A meets basic needs by providing VHF transmission, LF range reception suitable for the exacting requirements of night instrument operation, and rotatable loop navigation.

ARC Type 17 is 2-way VHF equipment, including tunable VHF receiver and one or more 5-channel, crystal controlled VHF transmitters.

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All ARC airborne equipment is designed for reliability and performance, not to meet a price.

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London Letter

By Richard G. Worcester

THE B-29's in RAF Bomber Command, the Douglas AD 1's in the Navy, the P2V-5's in RAF Coastal Command, the prospective F-86's in RAF Fighter Command and the Government requests for C-119's in the Tactical Air Forces are alarming a number of Britons. Despite crippling British taxes not one of these branches of the fighting services can stand altogether on its own feet.

Dependence on the United States, in a sense, undermines British efforts to put into the field a balanced air force able to carry on operations with its own supplies. The Conservative Government is being pressed on all sides to implement the election pledge Winston Churchill made when he said: "A Conservative Government would have the full right to examine in severe detail the way in which money is being spent, and what is the fighting power and defense security resulting from it."

•

The range and payload of the 140,000-lb. Bristol Britannia, if the estimates are right, will give this mainliner an edge over the 1956 Turbo-Constellation L-1049. At least two carriers, Qantas and TCA, have ordered the new Connie in such a way that they could later procure the Britannia. This Bristol aircraft is going to provide a type of competition for U. S. business altogether different from anything that has yet been built outside the U. S.

The shortage of dollars might mean later that some airlines will buy the Britannia even if it cannot carry the same payload and with the same range as the Connie. These carriers will be even more disposed in its favor if it can carry as much. Its chances of making substantial inroads into California's sales in the second half of this decade depends upon the Proteus 3 turbine, and on whether or not the company make the anticipated empty weight. These are two unknown factors as yet.

•

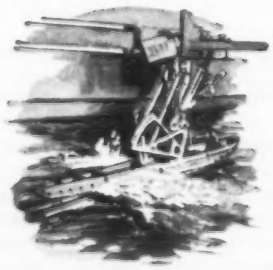
A few items of U. K. missile news have recently been made public: Fairey missiles have reached the point of being tested at the Commonwealth Proving ground at Woomera in Australia. And Folland Aircraft is also building missiles. The general view at present is that the U. K. missile policy is still a highly tentative and cautious one.

The very fact that the entire project can be kept secret is in itself an indication of its modest proportions. If the missiles were out in the assembly lines it would be impossible to conceal their presence. The only type of airplane that can be kept under wraps is the type that is squatting in an experimental plant, or in a laboratory—and that, by implication, is where all the U. K. missiles are. The sooner the new government brings them out of hiding and onto the assembly lines the stronger Britain will be.

•

Bicycles and motorcycles, unknown as serious modes of transportation in the U. S., are the accepted vehicles for the masses in both the U. K. and in Europe. Hitherto the Silver City cross-channel air ferry has been restricted to automobiles, but the independent carrier is now looking for air equipment designed to take the millions and their light pedal vehicles. The bicycle is an awkward shape—a flat object with protrusions here and there—and carriage of them in bulk presents special problems. The new order for "long nose" Bristol 170 twin-Hercules Bristol Freighters at around $210,000 each will increase the capacity and help realize the aim of 20,000 vehicles which are expected to fly the channel next year. By lengthening the 170's fuselage a few feet, the aircraft can take three small sport-type automobiles. One daring proposal is to use the 100,000-lb. Blackburn Universal Freighter designed to take 100 or more bicycles. Everything to do with the Universal, however, is a pipe-dream until the RAF orders it in sufficient quantity to meet the Army's commitments.

Seaplane research is bringing new phantoms to life in Stevens Tech's towing tanks, testing ground for the U. S. Navy Marlin's advanced hull design.



Delicately instrumented models prove today's dreams for tomorrow's air-sea power at the Experimental Towing Tank, Stevens Institute of Technology.

AN instrument-covered seaplane model knifes through the waters of a Stevens Tech towing tank. A Naval Bureau of Aeronautics researcher pores over plans for a jet-powered, swept-wing flying boat. A Martin engineer makes dreams take wings on his drawing board. And, step by step, planes that combine water-based mobility with land-based speed come closer to reality!

Latest product of seaplane research teamwork, today's advanced Martin P5M-1 Marlins add new sinews to our Navy's anti-submarine forces. Their performance is in the tradition of the history-making Martin seaplane flight to Catalina in 1912, the famous Martin China Clipper, the dramatic rescues of Mariner patrol planes and the record-load-carrying Mars flying boats of World War II.

Today's seaplane research promises to make their jet-powered successors tomorrow even more potent weapons in America's arsenal! THE GLENN L. MARTIN COMPANY, Baltimore 3, Maryland.

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Technical News Digest

• **Uniform requirements** for installation and maintenance of the electrical components of navigational aids are outlined in a new Technical Standard Order, TSO-N17a, issued by the Civil Aeronautics Administration.

• **Reginald J. S. Pigott,** director of the engineering division of Gulf Research and Development Co. of Pittsburgh, has been elected president of The American Society of Mechanical Engineers for 1952.

• **A radiant heating system** to remove snow and ice from runway surfaces and useable to disperse fog has been patented by the American Hydrotherm Corp., 33-70 12th St., Long Island City 6, N. Y. The system uses super-heated water (300-400 degrees Fahrenheit) in closed circuit plumbing of small diameter.

• **The Frank G. Brewer Trophy for 1951** has been presented to Dr. Harold E. Mehrens, supervisor of the CAA's Aviation Education Program for contributions "to the development of air youth in the field of education and training."

• **For "leadership in the science and art of turbine design,"** General Electric's Glenn B. Warren, general manager of GE's Turbine Division, has been awarded the ASME Medal, highest award of the American Society of Mechanical Engineers.

• **A new model antenna range** to facilitate measurement of antenna radiation patterns in the vertical plane, particularly in the high frequency band from 3-30 megacycles, has been developed by the National Bureau of Standards and is described in NBS Technical Report 1605.

• **Hytrol, the anti-skid device** manufactured by Hydro Aire Company of Burbank, will be installed on its fleet of ten Boeing Stratocruisers by Northwest Airlines at an equipment and installation cost of $39,000. NWA has been service testing the unit since February 1951, reporting as much as 25-40% increase in tire life and improved stopping.

• **A $25,000 automatic** weather station has been established by the U.S. Air Force on an island in the Aleutian chain. Operated by the Air Weather Service, a unit of MATS, the robot station automatically transmits weather data to Kodiak Island 200 miles away. It cannot measure ceiling or horizontal visibility. The station can operate unattended as long as three months.

Extra Section

By William D. Perreault

CONGRATULATIONS are in order to Vickers, Inc. for the excellent job done with their aircraft hydraulic conference in Detroit earlier this month. The meeting was well planned and carried out, with no attempt to dilute the technical aspects of the meeting with sales promotion. **Bob Stark** of Eastern Air Lines again showed his versatility, carrying on as conference chairman in a manner that kept the discussion well in hand at all times, without stifling productive interchanges.

•

William D. (Bill) Kent, president of the Flight Engineers' International Association (AFL), sent us copies of the Association's new publication "The Flight Engineer." We're pleased to see the flight engineers coming through with a house organ of their own. It'll give us a chance to keep a closer eye on the expanding activities of the organization. Editor of the paper is Donald H. Townshend of Pan American Airways.

•

During the Vickers-sponsored hydraulic conference, the question of what possible harmful effects of the new fire resistant hydraulic fluids might have on servicing personnel was raised. A United Air Lines representative noted that one Skydrol enthusiast, a Douglas man, had swallowed a spoonful of Skydrol to provide the ultimate proof of its harmless nature. The only effect, he reported, was to provide him with some good trotting practice for the next couple of days. We still recommend taking the precautions recommended by Monsanto.

•

While in Helsinki we had our first look at the Il-12, the Russian version of the Convair Liner. It seemed strange to see guards standing over a passenger airplane while it awaited its passenger load. The Il-12 carries 27 passengers, normally in nine rows of three seats each. The front three rows in the one we saw were used for cargo, leaving 18 passenger seats. With Russian-made engines of about 1,775 horsepower for takeoff, the 38,000-pound plane is slow getting off the ground. People who have been admitted to the cockpit say that the compartment is very similar to the DC-3's.

•

Airline shops, and particularly engine and accessory overhaul shops, appear to carry about the best collection of pin-up girls we've ever spotted. We ran across an exception last month we thought we should report. At Aer Lingus's shops in Dublin, in the accessory overhaul shop, hangs a single "pin-up," a religious painting. We were told that this is quite normal, that the pin-up girls of the rest of this industry are sort of rejected here.

•

Locally we have a report on the case of the gum-chewing fueling attendant. While filling the left-engine oil tank on a DC-3, this gentleman sneezed and his gum blew into the oil tank. The airline found it necessary to drain the oil tank to get the gum prior to refilling and dispatching the plane. It's incidents like these that promote strange-sounding regulations in the company manuals.

•

It's always difficult to judge where to draw the line in distinguishing between the aviation industry and those related industries that would not be possible without the airplane. Aerial surveying is typical of such an industry. We like to think that we keep abreast of the industry, but we know virtually nothing of this phase. For this reason we were particularly pleased by a new booklet entitled "Aerial Surveys and Maps from Photographs," published by Abrams Aerial Survey Corp., 606 E. Shiawassee St., Lansing 1, Mich. In simple, non-technical language it describes and illustrates this highly important and interesting phase of the aviation industry.

TECHNICAL LITERATURE

HYDRAULIC CONTROLS: A new line of Sperry hydraulic remote controls are described in bulletin 20-106 available from Sperry Products, Inc., Danbury, Conn. The controls are being used for manual or antomatic control of many varied devices in aviation, railroad, and marine industries. They have a maximum rated capacity of 400 in. lb. on the pressure stroke and 125 in. lb. on the return stroke.

METAL CLEANING: Oakite Products. Inc., 148B Thames St., New York 6, N. Y. has announced availability of a 48-page illustrated booklet describing specialized materials, procedures, and equipment for use in cleaning metals, preparing metals for finishing, and for other cleaning and related processes in aircraft production.

ADHESIVES: A new 8-page handbook, available from Minnesota Mining and Manufacturing Co., 411 Piquette, Detroit 2, Mich. offers research help in using adhesives, coatings, and sealers in product design and engineering. Revised to include 1951 data, the booklet reports availability of 1,000 different basic formulae; provides technical data on 11 adhesives, 7 coatings and 7 sealers; and offers field and laboratory assistance in solving adhesive problems.

WELDING ELECTRODES: Available from Alloy Rods Co. is a brochure entitled "Alloy Welding Electrodes for Defense Production." The brochure, describing various types of welding electrodes, can be obtained from Mr. E. R. Walsh, III, General Sales Manager, Alloy Rods Co., York, Pa.

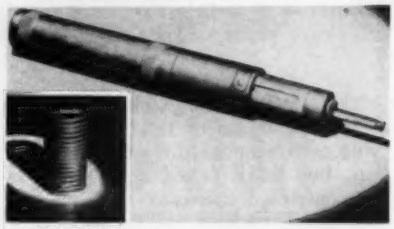
MATERIALS HANDLING: A 24-page booklet, "The How Book of Cost-Cutting Materials Handling" can be obtained from the Philadelphia Division, Yale and Towne Manufacturing Co., 11000 Roosevelt Blvd., Philadelphia 15, Pa. Large portion of the book is concerned with basic background material covering types of skids, pallets, and other industrial handling tools. Remainder of the book covers a plan for evaluating present handling methods through an engineering analysis akin to a time-motion study.

SILVER BRAZING: Available to engineering and brazing personnel of industrial manufacturers from American Platinum Works, 231 New Jersey Railroad Ave., Newark, N. J. is a 48-page, pocket-size manual described as a complete library on low-temperature silver brazing. More than 50 drawings and charts illustrate the text, and an effort has been made in preparation of the manual to treat all aspects of brazing applications and problems in a basic, understandable manner.

FRACTIONAL HP MOTORS: A pamphlet covering sub-fractional horsepower motors, their end applications and selection can be obtained from Air Marine Motors, Inc., 2183 Jackson Ave., Seaford, L. I., N. Y. The pamphlet discusses these motors in a non-technical manner and has been prepared for the use of personnel having little experience in the rotary equipment field.

New Products

Break-Off Tools



A new line of automatic tank break-off tools used for removal of inserting tangs on helical-wire thread inserts is available from the Heli-Coil Corp. The new tools which operate on the principle of a spring-loaded center-punch, remove tangs without disturbing the inserts. Manufacturer announces that fourteen standard models permit tang removal operations at production rates on the following sizes and lengths of stainless steel Heli-Coil thread inserts: 6-32 to ½-13 sizes in the National coarse thread series to lengths of 1, 1½, and 2 diameters; and 10-32 to ½-20 sizes in the National fine thread series to the same lengths.

Address: **Heli-Coil Corp.,** Danbury, Conn.

Sky Hook

A new, truck-mounted, hydraulically operated, extensible tower, with control on the operator's platform at the point of the boom is being manufactured by Mobile Towers, Inc.

Named "Sky Hook" Model 51, the tower was designed for field service to aircraft of the B-36 size.

Requiring only one operator, the tower controls for moving up and down and laterally are in the hands of the operator on the boom-point platform rail. Hydraulic outriggers help stabilize the tower.

Model 51 has a top working range of 51′ 6″. It moves in a 280-degree arc around the turntable base. Jointed boom folds over the truck cab to a traveling height of 11′ on an International L-152 truck.

Special units with longer or shorter booms can be made from the same basic design.

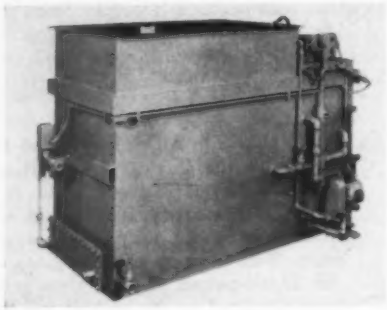
Address: **Mobile Towers, Inc.,** Fort Wayne, Ind.

Rol-A-Lift

Now being marketed by Skarnes Engineering and Supply is a hand truck especially designed for placing loads inside aircraft after they have been hoisted up by fork or platform trucks. The new device, called the Airfreight Model Rol-A-Lift, is used in pairs, one at each end of the load. They distribute load weight more evenly, preventing excessive weight concentrations which could damage the aircraft floor. The new equipment is provided with large-diameter, dual rubber tires on each caster, which further help distribute load weight. Standard models have a rated capacity of from 500 to 2,000 pounds per pair. For heavier loads, sometimes required of military planes, a larger set of Rol-A-Lifts is being developed to carry loads up to 4,000 to 5,000 pounds per pair.

Address: **Skarnes Engineering and Supply, Inc.,** 2905 East Franklin Ave., Minneapolis 6, Minn.

Degreaser



A redesigned Detrex hand-operated, solvent-vapor degreaser, which makes use of non-inflammable chlorinated hydrocarbon solvents, is now being marketed. Operation cycle consists of vapor cleaning, then flooding clean solvent over the work with a hand-held spray lance, followed by the usual pure vapor cleaning phase characteristic of solvent-vapor degreasing.

Clean-solvent storage is an integral part of the main machine body. This design makes it possible for the inside work space to be cleared of all projections, including solvent collecting trough, condensing bulbs, and vapor level control bulb. Machine can be operated from either side.

The new series of degreasers, designated as VS-800, have interior surfaces coated with a corrosion-resistant substance called FF-1. In addition to 21 standard sizes in which the model is available, special models can be built to fit individual product requirements.

Address: **Detrex Corp.,** Detroit 2, Mich.

BLUEPRINT FOR EFFICIENCY

Cooling and pressurizing the modern fighter or bomber requires highly efficient equipment—equipment which makes optimum use of permissible space, weight and power allowances. The design of such equipment is a Stratos specialty.

Stratos has designed and placed in production a series of highly efficient refrigeration units with cabin air flows ranging from 10 lbs/min to 100 lbs/min. In many thousands of hours of service this equipment has earned an enviable reputation for reliability and long service life.

Designers will find compact, lightweight and efficient Stratos units require a minimum of redesign to fit their particular application, be it the cooling of a jet bomber or fighter or the pressurizing and conditioning of a modern transport's cabin.

Stratos Air-Cycle Refrigeration Package

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Fairchild Aircraft Division, Hagerstown, Md. Chicago, Ill. • Fairchild Engine and Guided Missiles Divisions, Farmingdale, N. Y.

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The phenomenal progress of the aviation industry in the past two decades owes much to American Airlines. Formed in 1934 in a consolidation of several lines, this organization has forwarded such developments as direct transcontinental flights . . . stewardesses . . . lower fares . . . bigger planes . . . faster schedules and sleeper planes. The same progressive attitude, applied to passenger safety, has influenced such advancements as preventive maintenance . . . schools for pilots and other personnel . . . micro-finish for aircraft cylinders . . . and many radio communication and navigation aids. In this field Bendix* Radio has been working with American Airlines since 1939, with such good results that, today, every plane of American Airlines, like those of every major airline in the world carries Bendix Radio equipment. Remember this fact whenever you buy radio equipment of any kind—it is the finest pledge of quality in the field.

*REG. U. S. PAT. OFF.

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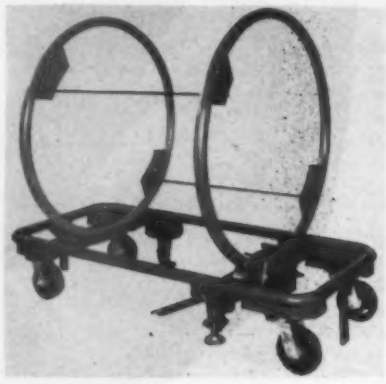
New Products

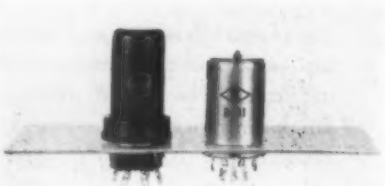


Jet Engine Dolly

Available from Towsley Trucks, Inc., is a new "rollover" dolly for assembling jet aircraft engines. The engine is mounted in two tubular steel rings which are carried on rollers mounted in the dolly frame, permitting rings and engine to be revolved to any work position. These "rollover rings" can be held rigid in any position by a locking footbrake, operated from either side of the dolly. Hold-down clamps on rings prevent any possible upsetting of the engine.

The dolly is constructed of a tubular steel section frame with rounded corners. Dolly frame is mounted on four spring-action swivel casters. Floor locks are provided for holding dolly stationary during assembly operations. The device is 80 inches long and 36 inches wide overall. The height of the frame from the floor is 15 inches. Total weight including two rings is 570 pounds.

Address: **Engineering Dept., Towsley Trucks, Inc.,** 1766 Elmore St., Cincinnati 23, O.



Light-Weight Relay

A four-pole, double-throw relay, designated Diamond H, has been developed by The Hart Manufacturing Co. Designed to meet requirements of USAF Specification MIL-R5757, the new hermetically sealed relay exceeds several standard margins, the manufacturer states.

Light weight, small size, and ability to withstand vibration and shock permit use of the relay with guided missiles,

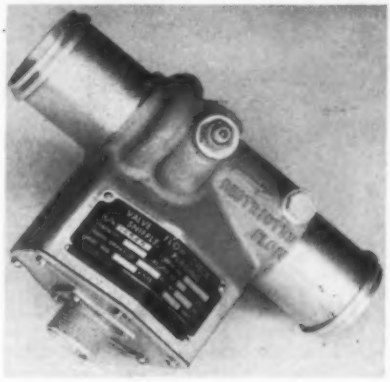
rockets, supersonic and high-altitude aircraft, and with radar.

The units give operational shock resistance higher than 50 G's, will operate under vibration higher than 40 G's, and mechanical shocks of 120 G's.

Manufacturer states that the Diamond H relay will operate successfully up to 80,000 feet. It was designed to operate in temperatures ranging from minus 65 degrees C to plus 200 degrees C.

Terminal arrangements call for soldered connections, but plug-in terminals may also be obtained.

Address: **The Hart Manufacturing Co.,** 110 Bartholomew Ave., Hartford, Conn.



Fuel Tank Valves

Two new fuel-tank accessory valves for use in fuel purging systems are being produced by Pacific Airmotive Corp. The new valves are the sniffle, flow-check type, permitting flow of air in both directions, the outflow from the tank at a predetermined, restricted setting and a nearly unrestricted inflow to satisfy conditions of vacuum relief. Two sizes of valves are in production. The 1½″ size is for flows from 1 to 6 pounds per minute, and the 3″ size is for flows from 2 to 12 pounds per minute. To provide for low-temperature and icing conditions, the valves have built-in heating elements and overheat thermostats. Power required is 24 v D-C.

Address: **Pacific Airmotive Corp.,** Manufacturing Division, Burbank, Calif.

Jet Engine Starter

A Jack & Heintz jet engine starter, incorporating a friction ring jaw mesh arrangement instead of the D-C solenoid usually used for jaw meshing action, has been announced by the company. Manufacturer states that the new starter will always produce positive meshing action as long as sufficient electrical power is available to rotate the unit's armature.

The new component consists of a phosphor bronze friction ring which restrains jaw rotation and permits a

NEW BENDIX AMSPEAKER

Assures Constant Listening Watch!

Descend to... 3000 feet... and maintain...

The use of head phones in the pilot's cabin of large aircraft can now be as obsolete as head phones on a home receiver. For the first time in the industry, Bendix Radio is offering a simple combination package of speaker and amplifier. The Amspeaker is an efficient, compact unit that can replace head phones. It reduces fatigue . . . adds to comfort and convenience . . . and increases safety by providing a *constant* radio listening watch. One Amspeaker is mounted near the pilot, one near the co-pilot, and, if necessary, others can be mounted near other crew members. Both pilot and co-pilot can receive the same or *different* messages simultaneously. The Bendix Amspeaker is simple to install. Only three inputs are required: 115 AC, muting control and audio input from crew members' jackbox. It uses ruggedized tubes and is easy to service, too—the power supply and amplifier are built inside the speaker housing. Write for further details on Bendix Radio's newest advance in aviation radio.

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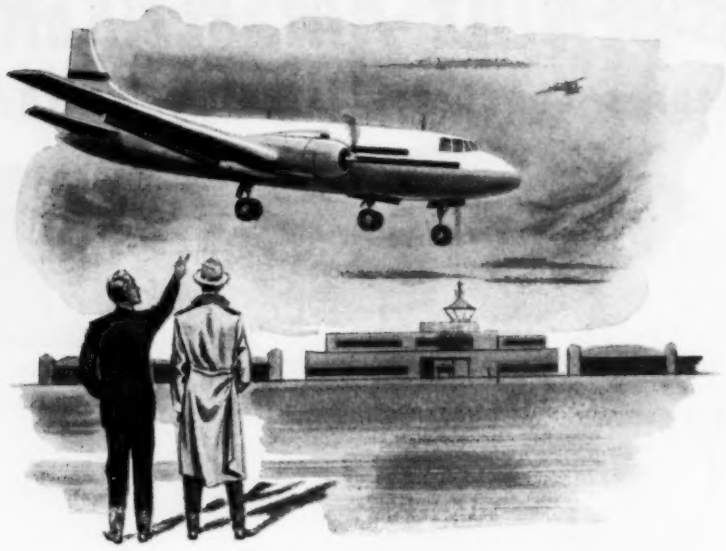
BENDIX RADIO DIVISION of Bendix Aviation Corporation

Export Sales: Bendix International Division, 72 Fifth Avenue, New York 11, New York
Canadian Distributor: Radio Engineering Products, Ltd., 4305 Iberville Street, Montreal, Quebec



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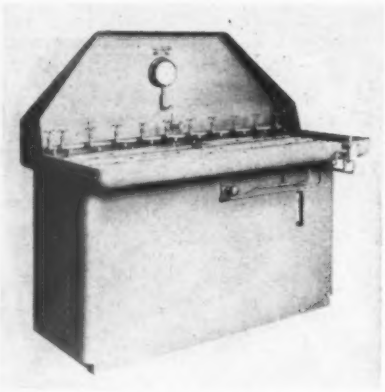
cam to ride down a ramp to extend the starter jaw. As the jaw moves out, tension on the friction ring decreases. At full extension, there is no tension of the ring on the jaw. The constant current, variable-voltage starter is rated at 0-30 v D-C, 1,000 amp, 800 rpm, 20½ hp. It weighs 46 pounds and has an overall length, including end terminals, of 13 13/16 inches.

Address: **Jack & Heintz, Inc.,** Cleveland 1, O.



Hydraulic Test Stand

A hydraulic stand for testing flexible hoses used in aircraft is being marketed by Superdraulic Corp. The new test stand can be used also, after modification, for testing of valves, cylinders and other equipment.

The Superdraulic stand is built to provide test pressure up to 5,000 P.S.I. with large volume pumps and up to 30,000 P.S.I. with special booster equipment. It can be modified to include accumulator or cycling equipment as well as timing devices and to employ any types of hydraulic oil for test purposes.

Address: **Superdraulic Corp.,** 14256 Wyoming Ave., Detroit 4, Mich.

Plastic Film Tape

A new transparent plastic film tape designed to prevent galvanic corrosion between aluminum and magnesium aircraft parts, is available from Minnesota Mining and Manufacturing Co. In addition to use for separation of dissimilar metals, the tape—"Scotch" brand plastic film tape No. 473—can be used for overcoating printed tapes used to identify fuel lines. Manufacturer claims that for this purpose the tape possesses transparency, conformability, dead stretch, protection, and aging stability. The new tape is made in ½-to-30-inch widths in 36-yard rolls. It is available on both rated and non-rated orders.

Address: **Minnesota Mining and Manufacturing Co.,** 900 Fauquier St., St. Paul 6, Minn.

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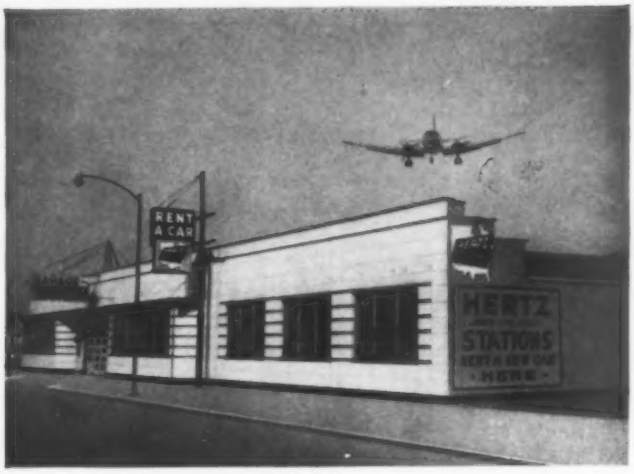

The Hertz station at the Chicago airport where rental cars are available day and night to incoming air travelers. Other Hertz airport stations are being added as required.

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Odessa

UTAH
Salt Lake City

VIRGINIA
Bristol
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NOTE: Godfrey-Davis, Ltd., largest car rental organization in Europe, is *exclusively* a licensee member of the Hertz Driv-Ur-Self System, Inc., and meets reservation passengers with cars at any airport, or hotel, in England, Scotland, Wales and Northern Ireland, or, if desired, anywhere on the Continent.

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IN THE NEWS

SERVICE

Getting top utilization from jet engines requires many techniques. Here are a few of the means used by General Electric to help the Air Force get maximum use from its J47 engines.

To provide immediate service for General Electric apparatus, more than 30 G-E Service Shops are placed strategically around the country. Four of these shops are currently handling aircraft gas turbine work; more can be adapted as required. Skilled technicians provide rapid and complete repair and overhaul facilities.

At an Air Force base, a G-E representative shows Air Force personnel some fine points of jet engine servicing. To back up this field training, formal G-E jet engine schools have been functioning since 1942. Courses are now presented in familiarization, overhaul, flight test engineering, and line maintenance.

G-E service follows G-E equipment around the globe. Here, "tech reps" from General Electric and North American Aviation Inc. in Korea discuss combat performance of the G-E-powered, North American-built F-86 Sabre. G-E aviation field service representatives cover the vital spots in the world, are always available.

For quality products and dependable service, call on the company that pioneered the aircraft gas turbine industry. Telephone your General Electric aviation specialist or write General Electric Company, Schenectady 5, New York.

AIRCRAFT GAS TURBINES

GENERAL ELECTRIC

210-23

TWENTY AIRLINES as well as manufacturers and armed services were represented.

Aircraft Hydraulics Problems Reviewed

Vickers-sponsored Detroit conference points up significant developments in fire-resistant fluids.

By William D. Perreault

EARLIER this month Vickers, Inc. of Detroit brought together some 80 airline and military hydraulics engineers and technicians, as well as a wide assortment of related manufacturing interests, to discuss current problems in transport aircraft hydraulics systems. By any standard, the Vickers-sponsored conference, held in Hotel Sheraton, was a success. Evident during the two days of fast-paced discussions were interesting trends:

• **The so-called non-inflammable hydraulic fluids** are no longer experimental fluids. Skydrol, manufactured by Monsanto Chemical Company, has accumulated over a half-million flight hours. Hollingshead's Hydrolube H-2 is now in use in 1,650 Navy aircraft, including planes now in service in Korea.

• **The U. S. Navy is going to shift** from spherical accumulators with diaphragms to cylinder-type units with pistons.

• **There is considerable disagreement** over the relative merits of steel versus 24 ST aluminum lines in high-pressure systems, and confusion as to the grade of stainless steel (⅛ versus ¼ hard) best suited to these applications. 61ST alloy is seeing some use.

• **System pulsations** have a known detrimental effect on hydraulic tubing and on unit life, but the problem has been appreciably minimized by improvements in the Vickers pumps.

• **The major factor controlling acceptance** of current fire-resistant hydraulic fluids is the fear of side-effects on hydraulic system seals, electric wiring and paint.

Vickers is well qualified to conduct a conference on high-pressure hydraulic systems. Vickers' piston-type hydraulic pumps, hydraulic regulators, accumulators and allied equipment form the heart of postwar transport hydraulic systems. The industry's recognition of this position was reflected in attendance at the conference by representatives of some 20 airlines, including five foreign airlines, engineers from the transport aircraft manufacturers, tubing and hose manufacturers, Air Force, Navy, etc.

Complaints Encouraged

To keep the meeting channeled according to industry interests, Vickers set Eastern Air Lines' Bob Stark up as conference chairman. Stark did just that, even when it meant complimentary comments on the Pesco gear-type hydraulic pumps, a strong contender in the high-pressure pump market. Between sessions, Vickers' F. T. Harrington, vice-president of sales, commented that he was afraid the airlines were not voicing their complaints with sufficient vigor. Actually, this was not the case. As legitimate complaints were raised, Vickers service department or engineering personnel (such as Phil Emrich and Walt Flinn) were able to point out production changes or development work now under way to correct the situation. There was little basis for critical interchanges.

Some of the Vickers projects with the widely used PF3911 pump which bore out this observation:

• **Introduction and production use** of metered valve plates to reduce noise and minimize cavitation and resultant system problems.

• **Service testing** of solid piston with tinned internal bearing.

• **Use of continuous cast bar stock** in the pump cylinder blocks.

• **Swaging of the piston** to the connecting rod.

• **Improved plug design** in the outer casting eliminating the pipe plug with female socket by use of hex head, straight-thread plug and O-ring seal.

• **Service tests conducted** with unit designed to equalize bearing race loads and improve bearing life.

Fire-resistant hydraulic fluids stirred up the maximum interest during the conference. Principal points discussed for each of the major types:

Skydrol: More than one-half million flight hours have been accumulated with Skydrol. Much of this time has been in the Douglas DC-6 cabin superchargers, which provide a severe acid test for many of the hydraulic fluid characteristics.

In the supercharger, hydraulic fluid is subjected to high centrifugal speeds, heavy bearing loads, high temperatures and related factors. Its fire-resistant qualities can be determined by laboratory tests, but the supercharger appears to offer impressive verification of its mechanical properties.

United Air Lines' experience with

PRINCIPAL CONFEREES were Tom Doe, Jr., sales manager; R. R. Stark of EAL, chairman; E. H. Emrich and W. L. Flinn of Vickers Service Dept.

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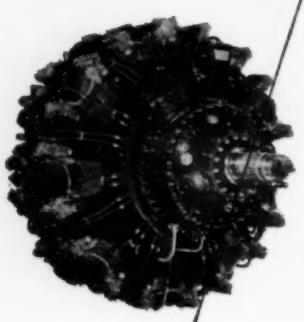

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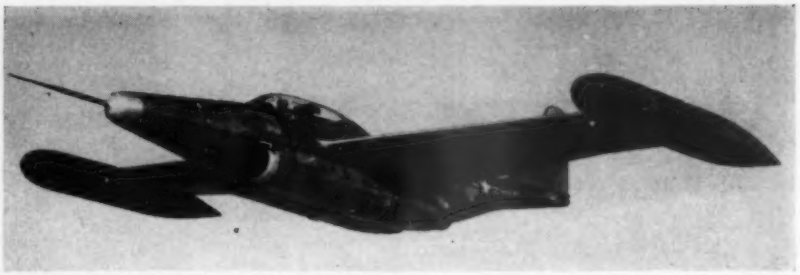

LATEST VERSION of the USAF's Northrop Scorpion all-weather fighter is the F-89D, which grosses more than 40,000 pounds. It is equipped with rockets and has an electronic aiming and automatic triggering system. Since no rocket mounts are visible on the clean under side of the wing, the rockets must be located internally, although the Air Force is not commenting on their location. The photo-retouching work on the fore ends of the tip tanks suggests they might be located within the tank mount.

Skydrol, for instance, has shown definite improvement in pump life. In UAL's superchargers for three years now, Skydrol has contributed to longer overhaul life, which increased from 750 hours to 2,000 hours.

United uses Skydrol from 4,500 to 5,000 hours, then removes and filters it to reduce acid and water accumulated during service. Monsanto has set up a series of three simple tests to determine when Skydrol should be removed and filtered with micronic filtering equipment. These tests measure specific gravity, neutrality and viscosity. They apply primarily as a test of fluid used in the supercharger. Monsanto will refund $2 per gallon for used Skydrol.

Principal problem with Skydrol appears to be the manner in which Skydrol attacks regular hydraulic system packings. Before Skydrol is used, all system seals have to be changed to ones with Skydrol-resistant properties. United reported that the required conversion on a Douglas DC-4 took three full days during aircraft overhaul. Although this hinders, it does not prevent conversion of existing equipment to the fire-resistant Skydrol.

Seals Developed

Skydrol also attacks regular paint and electrical wiring. Paints and wire which will withstand Skydrol have been developed and others are under development. Both Monsanto and Phillips Petroleum Co. have promising hydraulic system seals which will be usable with either Skydrol or mineral oils. Monsanto will soon mold seals from these development compounds and run tests on them.

Mixing of Skydrol and standard mineral oil fluids produces gum-like substances in the surge tanks, but this has not proved an operating problem. This substance is the result of partial precipitation of the mineral oil when mixed with Monsanto's fluid. Up to 10% contamination of Skydrol with oil is considered allowable.

Hollingshead H-2: The Navy now has 1,650 aircraft equipped with Hydrolube H-2, a water-based hydraulic fluid with exceptional fire-resistant qualities. One of the principal advantages of H-2 is that it can be readily adapted to operating aircraft without changing seals. H-2, the Navy spokesman said, does not affect rubber or composition seals, hoses or wire. If left standing on paint for several hours it does soften paint. Being water soluble, H-2 can easily be washed off painted surfaces.

An isolated instance of Hydrolube H-2 attacking leather seals in an A-3A autopilot servo was reported. An increase in the rate of accumulator diaphragm failures was also reported, but this was partly attributed to coincidental changes in the composition of the diaphragms. The Navy's proposed shift to cylinder-piston accumulators will eliminate any real or feared trouble from this source. The Navy is also going to a vinyl-type paint that is unaffected by H-2.

While most experience with Hydrolube H-2 has been military to this date, Transocean Airlines has accumulated 1,100 hours of flight time with the new fluid in a C-54. The U. S. Air Force recently started a test on a C-47, have now accumulated about 80 hours with H-2.

A committee of the Society of Automotive Engineers, it was reported, is now investigating the long-range effects of water-based hydraulic fluids on leather packings in related systems. This is the A-6 committee.

Lockheed Aircraft Corp.: Lockheed has dropped its work with development of a fire-resistant hydraulic fluid, turning over its early results to Wright Field for evaluation.

Linde Air Products: Linde is now working on improved water-based fluids, as compared to their earlier U-4 fluid, and tests to date indicate improved stability, better temperature-viscosity relationship and corrosion resistance "above expectations."

LEADING AIRLINES AGREE

Third-Quarter International Traffic, 1950-51 Compared

AIRLINES	REVENUE PASSENGERS	REVENUE PASSENGER MILES	AVAILABLE SEAT MILES	PASSENGER LOAD FACTOR %	U. S. MAIL TON-MILES **	FOREIGN MAIL TON-MILES	EXPRESS TON-MILES	FREIGHT TON-MILES	TOTAL TON-MILES REV. TRAFFIC	AVAILABLE TON-MILES FLOWN	% AVAILABLE TON-MILES USED	REVENUE PLANE-MILES	SCHEDULED MILES	% SCHEDULED MILES COMPLETED
American	29,768	22,087,000	36,632,000	60.29	38,787	14,367	2,349	378,047	2,756,152	4,964,689	55.51	713,691	712,751	100.00
1950	24,674	19,164,000	29,581,000	64.78	29,795	8,739	3,653	369,754	2,431,447	3,960,983	61.38	588,374	538,966	100.00
AOA	PAA-AOA merger was effective September 26, 1950.													
1950*	45,328	67,872,000	99,193,000	68.42	510,850	153,725	722,416	. . . .	8,751,301	13,257,257	66.01	1,968,657	2,047,949	92.76
Braniff	7,800	17,095,000	35,428,000	48.25	60,897	10,022	. . . .	404,212	2,158,082	4,948,943	43.61	316,391	327,495	98.66
1950	6,193	12,329,000	30,999,000	39.77	22,627	4,694	. . . .	252,919	1,476,087	4,443,033	33.22	723,594	755,070	95.83
C & S	6,990	8,863,000	19,337,000	45.74	9,394	1,099	. . . .	135,324	1,070,549	2,683,383	39.88	420,049	427,064	98.36
1950	6,286	7,362,000	16,532,000	44.40	7,361	936	. . . .	158,528	928,994	1,934,545	46.31	432,769	427,594	99.86
Colonial	12,152	9,490,000	11,195,000	84.77	4,732	1,273	. . . .	5,799	1,013,000	1,345,550	75.28	215,288	139,779	100.00
1950	9,386	7,661,000	11,001,000	69.64	1,681	1,326	. . . .	9,939	821,043	1,322,232	62.09	211,557	142,945	99.27
Eastern	18,353	26,502,000	46,758,000	56.68	93,171	. . . .	. . . .	86,512	2,934,804	8,252,822	36.17	735,156	744,192	99.02
1950	4,663	5,076,000	10,231,000	49.61	22,073	. . . .	. . . .	48,025	605,316	1,228,390	49.28	199,762	191,360	100.00
National	32,276	8,230,000	14,514,000	56.70	6,266	. . . .	6,529	60,993	906,342	1,305,597	50.22	253,967	243,592	93.08
1950	22,894	6,189,000	10,359,000	56.99	3,008	. . . .	44,549	32,443	708,178	1,412,110	50.15	196,719	192,832	97.24
Northwest	24,582	42,117,000	60,171,000	69.99	447,659	118,299	80,966	1,930,252	7,063,477	9,411,113	75.05	1,595,326	1,421,572	99.17
1950	16,606	32,765,000	50,296,000	65.14	502,715	60,042	61,268	1,493,707	5,650,978	7,749,757	72.92	1,583,369	1,433,372	99.64
Panagra	30,051	30,261,000	55,194,000	54.83	114,399	65,241	630,763	. . . .	4,154,882	7,623,368	54.47	1,506,493	1,473,449	99.24
1950	25,306	26,238,000	55,569,000	47.22	87,476	56,301	430,366	. . . .	3,478,774	7,403,057	46.99	1,564,367	1,449,142	99.77
PAA														
Latin Amer.	213,622	204,037,000	327,000,000	62.40	801,215	151,216	. . . .	5,564,604	26,166,404	41,697,900	62.75	7,594,452	5,743,923	99.34
1950	197,747	184,834,000	269,746,000	68.54	655,123	183,810	5,117,509	196,126	23,993,041	38,562,552	62.23	7,066,552	5,739,534	99.52
Atlantic	102,439	154,110,000	234,122,000	65.82	1,395,370	331,274	945,101	2,613,200	22,254,151	29,793,805	74.69	4,623,938	4,560,650	97.34
1950	52,549	111,039,000	139,284,000	79.72	851,320	201,846	1,972,262	29,391	15,187,459	20,627,670	73.63	3,350,101	3,189,401	98.10
Pacific	24,169	34,045,000	114,760,000	73.23	848,939	110,256	. . . .	1,994,675	11,388,530	16,755,131	67.97	2,435,957	2,281,579	99.95
1950	20,552	67,916,000	102,014,000	66.57	1,445,891	153,459	1,622,063	. . . .	9,930,589	15,414,537	64.42	2,232,514	2,272,751	96.44
Alaska	22,447	23,276,000	41,963,000	55.47	124,300	. . . .	. . . .	1,613,145	4,173,532	6,529,434	63.92	955,511	731,456	99.99
1950	17,010	16,316,000	24,681,000	66.11	100,084	. . . .	1,086,412	. . . .	2,382,911	5,003,457	57.62	737,764	639,696	95.96
TWA	47,321	115,386,000	164,748,000	70.64	944,016	341,526	. . . .	1,749,268	15,804,563	23,464,965	67.35	3,912,617	3,898,373	99.18
1950	42,406	119,203,000	186,977,000	63.75	721,728	316,710	. . . .	1,495,202	15,576,975	25,646,742	60.74	4,424,349	4,236,997	97.90
United	14,521	35,955,000	46,610,000	77.14	218,628	. . . .	. . . .	119,091	4,107,321	6,392,163	59.59	885,793	890,434	99.17
1950	12,392	42,333,000	50,969,000	83.06	144,433	. . . .	. . . .	2,367,101	6,855,695	8,839,264	77.12	1,445,764	506,400	100.00
TOTALS	536,491	782,459,000	1,208,482,000	64.75	5,107,773	1,144,573	1,665,713	16665,122	106,002,302	166,173,969	63.79	26,715,139	24,176,219	99.05
1950	504,492	726,347,000	1,087,982,000	66.76	5,106,670	1,154,638	11,060,498	6,453,135	99,283,788	156,905,592	63.28	26,675,282	23,884,559	98.01

* AOA's 1950 figures are through September 25 only.

** Includes air parcel post.

NOTE: Figures include both scheduled and non-scheduled operations. Data in above tabulations were compiled by American Aviation Publications from monthly reports filed by the airlines with the Civil Aeronautics Board. Figures for American Airlines include that carrier's service to Mexico but not to Canada; for Braniff to South America; C & S to South America; Colonial to Bermuda; Eastern to Puerto Rico; National to Havana; Northwest to Orient and Honolulu and United to Honolulu. Operations of U.S. carriers into Canada are included in domestic reports to CAB, in accordance with CAB filing procedures.

REVENUE PASSENGERS carried by the U. S. international and overseas airlines during the third quarter of 1951 totaled 586,491, a 16.2% gain over the 504,492 handled in the same three months of 1950, according to reports filed with the Civil Aeronautics Board. Passenger-miles flown during the July-August-September period totaled 782,459,000 as against 726,347,000 registered in the same months of 1950, for an increase of 7.7%. But with an 11% increase in available seat-miles, the average passenger load factor dropped to 64.75%, or a 3% decline from the 66.76% average in the 1950 third quarter. There was a 6.7% gain in total ton-miles of revenue traffic, yet this increase was primarily attributable to the improved passenger traffic volume; express and freight ton-miles went up less than 5%, and total mail ton-miles was .1% below that for the year before.

Self-Ticketing by ATP Subscribers Assailed

Plea for an early CAB decision on various airline complaints against an American Airlines air travel plan practice was made by airline representatives who met recently with CAB staff people. Complainants, United, Eastern, C&S, Capital and the American Society of Travel Agents, last July asked the Board to investigate a practice under which American distributes blocks of blank tickets to various air travel plan subscribers. In October, United asked that a cease and desist order be issued pending the Board's investigation. To date, CAB has taken no affirmative action.

The complainants alleged to Sydney B. Smith, chief of CAB's carrier relationships division, that the American practice will lead to "all kinds of abuses." Eastern's general traffic manager, R. W. King, claimed that improper ticketing and reservations procedures are a natural result of permitting clerks of non-airline companies to fill in the blank tickets furnished by American. Further, it was pointed out that continuance of AA's practice will force the rest of the industry to adopt it with the result that all will be competing for existing airline travelers instead of concentrating on new business.

If the Board decides to investigate, the complainants will want a cease and desist order preventing continuance of the plan until the investigation is completed.

Deater of AA to Head Personnel Conference

John Deater, American Airlines director of personnel, was elected chairman of the board of the Airline Personnel Relations Conference at the organization's annual meeting in Miami early this month. J. L. O'Brien was re-elected executive director.

The new board chairman succeeds Robert J. Wilson, vice president-personnel and properties, Capital Airlines, who continues on the Board. New directors are W. T. Beebe, Chicago & Southern vice-president-personnel; Harvey Barnard, director of personnel, Frontier Airlines; and J. H. Brock, vice president-industrial and personnel relations, Eastern Air Lines.

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Airline Commentary

By Eric Bramley

WE have just returned from a 5,000-mile trip to Colombia, South America, to view the first installation of Whiting Corporation's Loadair at Barranquilla, and to do some traveling on Aerovias Nacionales de Colombia (AVIANCA). A most interesting trip, about which we will be writing.

•

Some general observations on Colombia: It's a country that could do a large tourist business, but this business needs development and promotion . . . Cartagena, Medellin and Bogota are natural attractions . . . Package tours would be a good idea . . . However, Colombian hotels and stores must keep their prices reasonable. Contrary to some of the literature we read before making the trip, Colombian prices aren't "ridiculously" cheap although they're not sky-high either . . . There's not nearly as much English spoken in Colombia as we had been led to believe. Hotels need more English-speaking personnel to attract tourists . . . There are a number of Colombian products that are good buys that we didn't see listed in promotional material . . . PAA's Intercontinental Hotel Corp. has done a good job of improving the del Prado Hotel in Barranquilla . . . Intercontinental's 17-story modern hotel in Bogota will be completed next year . . .

•

Some of you international experts may wish to express an opinion on the following incident which we heard about in Barranquilla. An Italian citizen who had been in Argentina for some time decided to go to Canada. He traveled Braniff to Panama, Pan American to Barranquilla, and KLM from there to Canada. Upon arrival, Canadian authorities found him medically unacceptable for entry—poor risk and might become a public charge.

These authorities ordered KLM to carry him out of the country, so the airline returned him to Barranquilla, turned him over to PAA, suggesting that he be transported to Panama and delivered to Braniff. PAA, however, refused, asserting that this course of action would do no good because the passenger had no visa to re-enter Argentina. PAA was also afraid that it might become responsible for taking the passenger to Italy if Braniff refused him. If he had had the necessary visa, PAA said it would have carried him without question.

When we left Barranquilla, the man without a country was in his second day of sitting in the terminal. He had no money. The port captain was trying to order PAA to get him out of Colombia and PAA was insisting that it had no responsibility. Unfortunately we don't know the end of the story, but who do you think was responsible?

•

Among those seen in Colombia, in case you know them: Paul Miscione, Pan American World Airways' veteran, now representing the company in Bogota . . . John Koot, KLM's well-liked and respected Colombian representative . . . Tony Arriza, head of the U. S. civil air mission and long-time CAA official . . . Gabe Vergara, Bogota representative of Sociedad Aeronautica Medellin (SAM), cargo line, formerly with AVIANCA, and who was connected with PAA's wartime airport construction . . . Felipe Monino, technical adviser to the president of AVIANCA, graduate of a number of U. S. schools, and with many Stateside friends . . .

•

Capt. Roscoe Donahue of TWA really ought to get sick more often. While flat on his back in a Los Angeles hospital, he (1) sold his doctor two seats to New York, (2) sold him one to Chicago, and (3) sold him still another to New York. Another doctor happened to wander within range, and was sold a ticket to Columbus. Capt. Donahue was discharged before he shipped the whole staff out of town.

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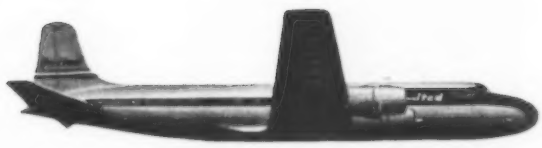

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CAB Calendar

Dec. 26—(Docket 4902) Hearing in investigation of Consolidated Flower Shipments, Inc.—Bay Area. Tentative. Examiner Richard A. Walsh. Postponed from October 26.

Jan. 2—(Dockets 5065 & 5073) Hearing in North Atlantic Certificate Renewal Case (TWA and Pan American). Tentative. Examiner Francis W. Brown.

Jan. 7—(Dockets 5068-67) Hearing in Pacific-Northwest-Alaska Tariff Investigation. Tentative. Examiner Paul N. Pfeiffer.

Jan. 7—(Docket 4083 et al.) Hearing reconvened in Central Airlines Certificate Renewal Proceeding. 10 a.m., Room E-210, Temporary Building 5, Washington, D. C. Examiner Herbert K. Bryan.

Jan. 8—(Docket 5209) Oral argument before the Board in American Air Transport & Flight School, Inc., Revocation Proceeding. 10 a.m., Room 5042, Commerce Building, Washington.

Jan. 22—(Docket 4656) Hearing in Houston-New York Interchange Case TWA, Chicago and Southern, et al.) Tentative. Examiner William F. Cusick.

Jan. 28—(Docket 5067 et al.) Hearing in Pacific-Northwest-Alaska Tariff Investigation. Tentative. Examiner Paul N. Pfeiffer.

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Company Ties

Aer Lingus, Irish Air Lines, has an official company tie. It has a green background (naturally) with the company emblem in gold sprinkled around for pattern. All officers and employes wear the ties during working hours, and sometimes out, making for quick identification by the public of Aer Lingus personnel. It's also a good advertisement. The emblem is neatly worked in so that the tie is good looking in any event.

Airline People

—ADMINISTRATIVE—

Carl A. Benscoter elected v.p.-operations of Robinson Airlines. . . **A. W. Worthen** appointed ass't secretary of the company.

Tillisch

Benscoter

Dr. Jan H. Tillisch, consultant in medicine at Mayo Clinic, Rochester, Minn., appointed medical adviser to Mid-Continent . . . He has been a director of the company since October, 1949.

J. P. Houghton has resigned as secretary of Air Cargo, Inc., effective January 1. His future plans have not been announced.

—OPERATIONS-MAINTENANCE—

Capt. Julian A. Wiggins is now supt. of flight operations for Ozark.

J. M. Jones, check flight engr. for TWA at San Francisco, named supv. of flight engineers for western region with headquarters at Los Angeles.

Stan Gluck has returned to his post of station operations mgr. at Singapore for Pan American.

Airport News Digest

Just Shopping? California Association of Airport Executives at its semi-annual meeting held in Santa Monica, Calif. has passed a resolution to seek legislation through Congress to prevent re-possession of civil airports by the military. Although Brig. Gen. Harold Maddux, assistant to the deputy in charge of air base procurement, participating in a panel discussion, advised the airport managers not to be alarmed over appearance of military inspection parties making surveys, the airport executives are opposed to military recapture. They believe that in many cases such re-possession is contrary in principle to the will of Congress as expressed in the Federal Airports Act of 1946.

Gen. Maddux told the meeting that the military is "shopping" for airports. "When we need one field, we look at ten," he said. "If you guess your field is going to be taken, you're going to be wrong nine times out of ten."

Build Runways to Fit Jets? **A second resolution was directed at manufacturers' contemplating development of jet planes requiring 12,000- to 15,000-foot runways. The resolution urges the Administrator of the CAA to advise aircraft manufacturers that they must build aircraft which can operate from existing airports or from airports within the limits of CAA's Technical Standing Order N6a.**

The airport executives also were agreed that the time has come to take steps to alleviate the responsibility of airports for jet operations. Suggested was a type of "hold harmless" clause, absolving an airport of any liability and compensating it for extra maintenance and repair costs resulting from the takeoff and landing of jet airplanes.

HANGARS

• **Construction of a $103,000 hangar** at Love Field, Dallas, Tex., will begin shortly. Dallas Aero Service will use the facilities for aircraft storage and overhaul.

• **Massachusetts State Senate** has enacted and sent to the Governor a $2,500,000 bond issue for construction of a self-liquidating hangar for American Airlines at the East Boston, Mass. Logan Airport.

• **A $343,349 contract** for construction of a hangar at Lambert-St. Louis Municipal Airport has been awarded. Original bid was $7,000 more than the appropriation, but the contractor cut the price by eliminating hangar heating system.

• **Contract for construction** of a $2,500,000 hangar at Logan International Airport, Boston, is expected to be let soon. American Airlines will lease the structure.

LIGHTING

• **Installation of new high-intensity** runway lights at the Oakland (Calif.) Municipal Airport is now under way. The lights are adjustable for brilliancy and direction and stand 16 inches off the ground. New taxi lights are being installed at the east end of the field on taxiways.

• **Bids have been taken** for construction of the south extension of the electrical distribution system at Seattle-Tacoma International Airport. Estimated cost: $41,800.

• **Los Angeles International Airport** has completed installation of high-intensity lights on runway 25R to 8,500 feet, but only 6,000 feet of the runway is usable until a bypass road which now is the western boundary of the airport is replaced by another road further west early next year.

MISCELLANEOUS

• **Steelwork** for the new 150-foot, $985,000 control tower at Idlewild Airport has been finished. Tower is expected to be in operation early next year.

• **A new neon runway lighting system** with beam landing approach lights on both ends has been installed at the Harlan, (Ia.) Municipal Airport.

• **Pennsylvania Aeronautics Commission** has approved a sum of $140,000 as its share of the $560,000 to be spent enlarging and developing the Latrobe, (Pa.) airfield. Improved field will be used as Westmoreland County Airport.

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The Washington View

By Vera Foster

REASONS behind CAA's swing back to more rigid regulation of private pilots are evident in the statement that accidents involving private pilots during 1948 and 1949 clearly indicate inadequacies in extremely simple certification requirements.

As we mentioned last issue, CAA devoted much study in a real effort to arrive at more realistic regulation. In the interest of the same realism, however, some observers are voicing the hope that CAA regulations will not go all the way back to the difficult written and flight tests of the early '40's but will instead manage to strike a happy medium.

•

As predicted several months ago by AMERICAN AVIATION, Piper Aircraft Corporation and Cessna Aircraft Company have decided to do their own airworthiness testing and certification of the airworthiness of the aircraft they manufacture.

CAA has authorized the two companies to shoulder responsibility for test and certification of aircraft of not over 5,000 pounds and carrying not more than five passengers.

This long-sought industry share in certification is available to any manufacturer holding a type and production certificate.

•

Holding "Identification Card Parties" has been suggested as one way to persuade mechanics, students and pilots to rustle their bones into the airport and obtain the CAA ID cards. Airmen without these cards cannot legally use their certificates. So far, according to CAA estimates, only half of the necessary cards have been issued.

•

Operators are in a rather poor bargaining position today in obtaining the services of good A&E mechanics. According to a recent AMERICAN AVIATION survey, factories, airlines, contract flight schools, and the military are luring A&E's away from fixed base operators by the hundreds.

The Air Force offers mechanic and specialist training to high school graduates as well as good ratings to already trained mechanics; average hourly wages are running around $1.60 to $1.75 all over the country; good working conditions and housing conditions are played up to attract mechanics.

One frequently mentioned thought that operators might take seriously is that present-day mechanics have progressed above the level of the old "grease monkeys." They'll give second thought to any job—whatever the pay—where they can take a real professional pride in their work.

•

Air Force cadets will be granted the approximate equivalent of one semester's credit by most institutions, for completing USAF flight training, according to an official of the University of Illinois.

This should be good news to the many men who interrupted their college and university training to enlist as cadets. Quite a few of these servicemen are looking forward to taking up their formal education where they left off.

•

If you haven't ordered that 1952 Beechcraft Twin-Bonanza, it looks as though you'll have to start dickering for the '53 model. Beech reports that all Twin-Bonanza executive ships scheduled for production in 1952 are completely sold out.

Sales record of the trim, $52,000, aircraft amply supports the often-voiced claim that a definite need for a "fill-in" aircraft exists, a plane to fill the gap between the four- and five-place single-engined ships and the Douglas DC-3 types.

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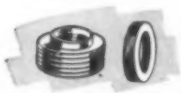

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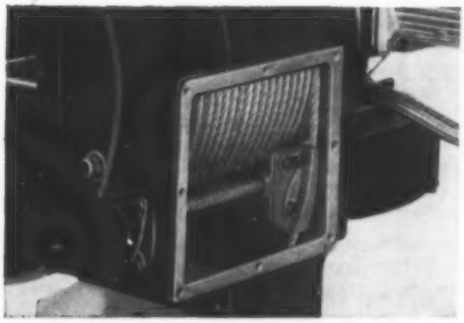
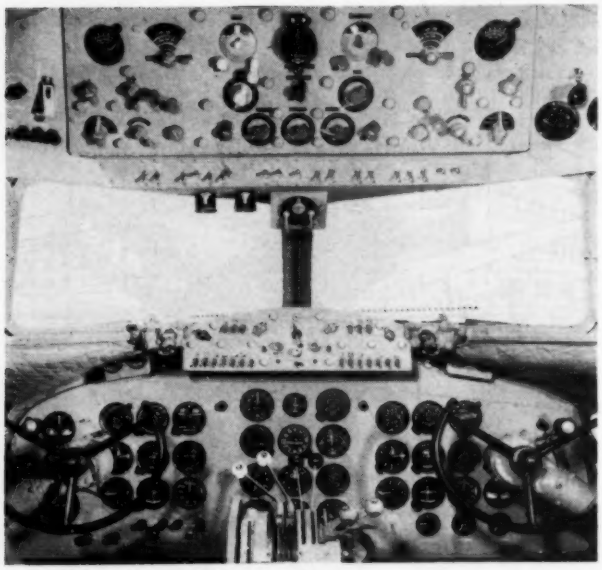


Close-up view of winch with cover removed, showing detail of cable crank and shaft mechanism.

IN FLIGHT

A PAGE FOR ALL PILOTS



NEW INSTRUMENT PANEL arrangement, with grey-tone color scheme, has been installed on the Garrett Corp.'s executive Douglas DC-3 transport. Installation was performed by AiResearch Aviation Service Co., of Los Angeles, Calif., one of Garrett's divisions. The background color (similar to that of the DC-6), together with ease of visibility and general compactness, have proved popular with Garrett Corp. pilots.

Another Way to Stop Stalls

CAA is seeking ideas which would lead to the development of a low-cost, reliable angle of attack indicator for lightplanes. Providing suitable designs are proposed, CAA would "try to find some funds with which to further such a development," according to E. S. Hensley, Director of CAA's Office of Aviation Safety.

Hensley's primary thought is that the angle of attack indicator would serve as an effective stall warning indicator and "aid in stall recovery," minimizing the principal cause of fatal accidents in private flying—the stall. In addition it would provide economic and operational advantages by making it possible for the pilot to fly his plane at the best angle of attack which would in turn assure best performance.

Illustrating this economic advantage, Hensley noted that on a large transport aircraft on a trans-ocean flight the angle of attack indicator would permit the pilot to save as much as 200 gallons of fuel by trimming his plane to the best advantage with data from this instrument.

The angle of attack indicator is an instrument operated by a free-swinging vane mounted on the end of a mast extending ahead of the plane into an area of undisturbed air. Aligning itself with the airflow, the indicator vane would provide relative motion in relation to the airplane wing and related mast. This relative position would be remotely transmitted to the cockpit to operate a clear pilot warning, a horn, light or other alarm.

Cancer at High Altitudes?

FLYING at altitudes above 80,000 feet, the pilot is subjected to sufficient cosmic radiation to make cancer a possible occupational hazard, according to Dr. H. J. Schaefer of the United States School of Aviation Medicine at Pensacola, Fla. In a report to the U. S. Air Force Symposium on Physics and Medicine of the Upper Atmosphere, held in San Antonio, Schaefer noted that this hazard has not yet been proved but appears likely.

To track down additional information on the practical side of this problem the Air Force plans to send mice aloft in balloons to 100,000 feet altitude. While no specific data on the degree of risk involved exists at this time, Schaefer reported that cosmic radiation at these high altitudes is in excess of that recommended as a safe dose of radioactivity for human beings.

Schaefer's theory on cancer risks at these altitudes was confirmed by Dr. H. J. Muller of Indiana University. Muller noted that, in addition to possible risks of cancer, some degree of "heredity mutation," physical or mental changes in the human, might be experienced, but that this was not at such a rate that it should be considered more serious than the natural heredity change rate.

New Plotter

BATORI Computer Co. has developed a new plotter which among a number of other new features, includes a scale of off-course heading correction to a destination without resorting to drawing and measuring new course lines.

The plotter itself is oblong shaped, four inches wide by 10½ inches long. The off-course correction graph consists of a fan-shaped grid at what would correspond to the destination end of the plotted course on a map. A center line runs the length of the plotter, with an airplane sketched in over the mid point to indicate the plane's position. The center line is graduated in 10 statute mile increments both toward the destination and toward departure point, in either a 1:500,000 or 1:1,000,000 scale.

To find the necessary correction after the pilot discovers that he is off course by a pilotage or other type of fix, he places the mid-point of the center line over the discovered fix on his map, with the fan shaped grid at the destination end of the plotter. Then he rotates the plotter slightly until the center line touches his last previous known position.

Now, in the fan-shaped grid, he can read the number of degrees necessary to correct to his destination and also the number of miles remaining. For ground speed and ETA purposes, he can also read the number of miles from the last fix on the center line scale.

In addition to this novel off-course correction indicator, the new plotter, known as the Anderson Mark I, can measure bearings and plot courses from either a meridian or a parallel, by means of a two-way compass rose, plot vectors at right angles and perform all the other functions of a standard plotter. It is available from the Batori company at Box 63, Grand Central Station, New York, N. Y.

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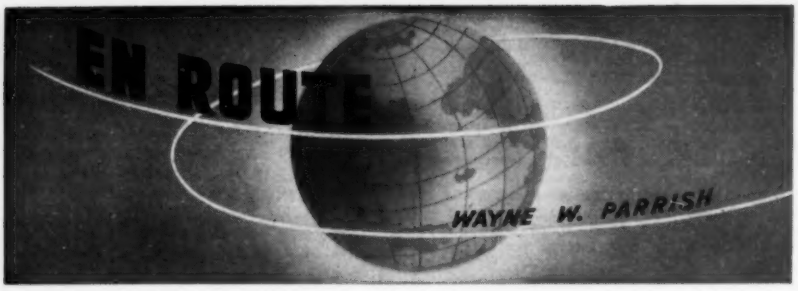

Safe Margin: Seldom have I flown as high in a DC-3 as on this Yugoslavian Airline flight from Frankfurt to Zagreb, but I wasn't objecting. We were considerably above the overcast and above those sharp, snow-capped 12,000- and 13,000-foot peaks of the Austrian Alps. Then we began descending and the overcast thinned out, and as the sun dropped low I could see the neat farms and villages of Southern Austria.

At some point we passed into Yugoslavian territory and the overcast built up again and we climbed back into it. Darkness came as we descended through heavy rain to the turf field at Zagreb. I could see a few lights here and there, but the town was not visible. We landed a little hard on the turf and taxied through mud and grass to a gravel ramp. So now I was in Tito's country, and I wondered whether I would be put through an examination by immigration.

A uniformed immigration officer came on board and asked for passports. He took a quick look at mine, found my visa, glanced at it, and returned the passport with a smile. Four or five fellow passengers disembarked and the rest of us remained in the plane. It was pouring rain outside. A number of airline ground people moved in and out. We waited for ten or fifteen minutes before the boarding passengers arrived. I could see a small passenger terminal about 300 feet away.

✣ ✣ ✣

DC-3 Memories: Sitting there in that DC-3 brought back many memories. The rain was pouring down hard on the fuselage and wings and I thought of many similar occasions in the U. S. when I sat in a DC-3 in a steady rain waiting for weather to clear ahead. But this was Yugoslavia, not Texas or Ohio, and I had an hour and three-quarter flight ahead to reach Belgrade. I wondered if I had a hotel room waiting for me.

Then came the local boarding passengers, all Yugoslavs going back to the capital. They were wet. A number had old brief cases, some had packages wrapped in newspapers. Most of them were men. They were all dressed in business clothes, but the clothes were obviously old. Virtually every seat was filled except the one adjoining me. The crew returned and we taxied through the mud to the end of the field and took off into the rainy night heading southeast.

✣ ✣ ✣

Hungary Close: I sat back in my seat and thought about the DC-3 and

this odd world. I could close my eyes and believe that I was flying United from Toledo to Chicago. Those Pratt & Whitney 1830's sounded exactly the same. The blue and grey interior of the cabin was certainly standard. Yet the crew only recently belonged to a Russian satellite country; even now we were paralleling, at from 50 to 100 miles distance, the borders of Hungary, Rumania and Bulgaria, which were definitely in the U. S. S. R. sphere. In those countries I would be slapped into the brig in no time at all. At the moment, I was a free agent.

The stewardess tried to be helpful. I had had one *slivovitz* (plum brandy) before Zagreb but had turned down the cold plate of salami and cheese because I wasn't hungry. Now I was beginning to wish I had taken the salami and thick coarse bread bacause I wondered how late I could eat once I got to Belgrade.

We didn't fly very high and occasionally I could see a few lights outside. Time passed rather quickly and we descended for the landing at Belgrade. Off to the right on a hill I could see Belgrade. Quite a big city and quite a few lights, but no neon signs as one sees in the U. S. and most European capitals. We landed on a paved runway, and it was only later that I found out that this was the only paved runway in the country. We taxied across the turf to the terminal as the runway is on the opposite side of the airport.

Welcome to Belgrade: So now I was in Belgrade, and I must say I have never gotten off an airplane with a greater feeling of dipping into the unknown as I did this evening. I got my coat on, grabbed my overnight bag, and was first off. It was no longer raining. At the foot of the steps was a group of men, one of whom, in white military uniform, asked me if I was Mr. Parrish. I said yes. He shook hands and asked me in halting English to accompany him.

My greeter turned out to be **Ratomir Andjelkovic**, operations manager for the Yugoslavian airline. My passport was quickly examined and stamped, and he suggested we go into the cafe to await the unloading of baggage. He apologized for his limited English and asked me if I would like a native Yugoslavian drink. Wanting to show my wordly knowledge I said, "You mean *slivovitz*?" This broke the ice. He was obviously pleased, and I had a jigger and was officially welcomed into the country.

Word of my imminent arrival had been delayed, he said, but he was able to get me a room at the Majestic Hotel for two nights and after that he would try to find a better place. I noticed quite a few people in the cafe, made up of booths and some tables, and everybody seemed to be smoking and talking. The cafe wasn't anything fancy, but it wasn't bad either.

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Customs Easy: In a few minutes we went back to customs and my bags were on the counter. A customs man asked me to open them, which I did quickly, but he made a very casual examination and it seemed rather clear that I was being given plush treatment. I couldn't help but notice that a big argument was going on at the other end of the counter. A woman passenger's bags were open with everything taken out and about a half dozen people

were involved in the loud debate over the contents. She had probably loaded up with a lot of scarce items in Frankfurt. The operations manager seemed anxious to get me on my way and I felt that he was embarrassed that I should see the argument going on. But it wasn't the first squabble in customs I've seen and not all of them have been outside the U. S.

I was put into a small and very old car and the operations manager told the driver to take me to the Majestic. He said someone from JAT (they pronounce the airline name as in "Yacht") would contact me the next morning. Off I went across the river flats toward Belgrade and after crossing the big bridge over the Sava River, which flows into the Danube a mile east of the bridge, we were on the stone streets of the city twisting and turning up the hill to the upper part of the city.

mitted his resignation as president of the company, effective no later than Jan. 1. He will remain as a director. Resignation was submitted to Clinton Davidson, Jr., board chairman and head of a group which purchased control of Resort over a year ago. Burwell offered to resign at that time but stayed on at request of directors who re-elected him president for an indefinite term.

Edward T. Bolton, who has been vice president-director and administrative vice president of Philippine Air Lines, has taken over new duties as vice president-adviser at PAL's U. S. headquarters, 212 Stockton St., San Francisco. A. S. Garcia, PAL's chief administrative officer in the U. S., has been named administrative officer for the company's operations in this country.

Eastern Air Lines and Mid-Continent Airlines will start interchange operations between Miami and Kansas City on Jan. 10 with one daily DC-4 flight. EAL planes will be used with EAL crews operating Miami-St. Louis leg and MCA crews St. Louis-Kansas City. Atlanta and Jacksonville are intermediates.

Eastern Air Lines has been granted authorization by CAA's Office of Aviation Defense Requirements to begin construction of a $3,172,821 line maintenance building at Miami International Airport.

Air Force now has 98 Curtiss-Wright C-46's and 34 Douglas C-54's on lease to scheduled airlines and non-scheduled carriers. None of the C-46's is being used on the Pacific air lift, but over half of the C-54's are operating to Japan and Korea.

TWA has started long-range instruction for 350 of its flight engineers in preparation for delivery next year of 10 Lockheed Super Constellations. Active flight engineers will be relieved for this schooling by newly-employed flight engineers as soon as they finish their own four-month indoctrination course.

Pan American World Airways is sponsoring a course in cargo operations for Military Air Transport Service officers at Miami headquarters of Latin American Division. PAA takes two officers at a time for a three-week course.

Purdue Research Foundation has completed the purchase of Mid-West Airlines authorized recently by CAB. Foundation, which plans no extensive changes until MWA certificate renewal question is decided by CAB, took all capital stock and possession of outstanding notes of MWA for $69,000. Officers and directors of new company are: Dr. Frederick Hovde, president of Purdue University and the foundation, and now president of MWA; Dr. R. B. Stewart, vice president-treasurer of the university and foundation and now secretary-treasurer of MWA; and Grove Webster, vice president and general manager. Other directors are Fred C. Anderson, former MWA president and now assistant general manager of the line and Charles Lynn, a trustee of the university and a director of the foundation. David Woodburn, of the university staff, is new comptroller of the airline. Offices are at Municipal Airport, Omaha 2, Nebraska.

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CIVIL

C. J. Reese, president of Continental Motors Corp., has been reelected president of the Aero Club of Michigan.

B. M. (Mike) Doolin, former manager of San Francisco International Airport, has been appointed director of the California Aeronautics Commission, effective Jan. 1. He succeeds Warren Carey, who resigned Nov. 1. Post pays $12,000 a year.

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CIVIL AERONAUTICS BOARD

W. R. Grace & Co., locked in a dispute with Pan American over an agreement under which jointly-owned Panagra is managed, advised CAB it will ask for a stay of the Board's investigation of the agreement until arbitration remedies under the agreement have been exhausted. Grace said it intends to hold Pan Am to its "solemn contractual obligations." Pan Am claimed the CAB inquiry goes to the validity of the agreement and the legality of a steamship company controlling an airline and should be continued.

Faced with revocation of its letter of registration by CAB, Air Transport Associates, non-sked headed by Amos E. Heacock, went to two Washington courts with three separate actions last week. In the U. S. Court of Appeals, Heacock asked review of the CAB revocation decision and an interim stay. In the U. S. District Court, he petitioned for a writ of mandamus directing CAB to act on a two-year-old certificate application. He also requested District Court to issue a preliminary injunction enjoining the Board from enforcing its revocation action.

Annual increase of $474,000 in mail pay for Pan American World Airways' future Alaskan operations and an additional payment of $1,400,000 back mail pay was proposed in a show cause order by CAB. New rates, figured on 70.93c per plane mile, would average about $1,569,000 annually beginning with July 1, 1951. Back pay is for 5½ year period ended June 30, 1951, and brings total to $8,683,000. CAB attributed proposed increase to sharp decline in non-mail revenues occasioned by lower fares and express rates and revenue losses to competing carriers. Decline more than offset reductions in operating expenses.

CAB proposed to cut Continental Air Lines annual mail pay to about $1,054,000, of which $788,000 is classified as subsidy and $266,000 as service pay. Under show cause proposal, new rates would be effective as of Oct. 1, 1951, and would be about 15.6% under rates received by CAL during year ended Sept. 30, 1951.

Delta Air Lines strongly urged CAB to retain the sliding scale formula under which its mail rates have been computed since April, 1948. In a forecast requested by CAB, Delta pointed out its

formula currently produces mail pay of about 60c per ton-mile and for the coming year will average about 55c. Non-subsidy rate for carriers in Delta's class, according to CAB, is 53c a ton-mile.

Agreement under which Colonial Airlines will lease DC-4's to Eastern for New York-Miami operations during EAL's peak winter season was approved by CAB which also granted an exemption eliminating the need for public hearings.

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LABOR

Approximately 5800 striking Pan American World Airways mechanics, stewards and commissary workers returned to their jobs after 3 days when President Truman invoked the Railway Labor Act. A three man fact-finding board will be named by the President to make recommendations in the dispute and no further strike may be called for 60 days. The Transport Workers Union-CIO is demanding an 18c wage boost for 4500 mechanics and 200 port stewards. In addition, the union wants a $40 monthly hike for flight stewards and stewardesses along with a reduction in flight time from 85 to 70 hours per month.

Air Line Pilots Association-AFL has signed contracts with 11 domestic trunklines and about half of the certificated local service airlines. Carriers still unsigned include Northwest (now in negotiation); Colonial (negotiations about to start); and National (talks start next spring).

Flight Engineer International Association-AFL won over the Air Carrier Flight Engineer Association 182-10 in a National Mediation Board election to determine the flight engineers' bargaining agent with United Air Lines.

Wage Stabilization Board is ready to start reviewing the merits of the Douglas-UAW-CIO dispute. WSB panel headed by Ralph T. Seward filed its recommendations and both sides were allowed to make comments and file briefs until Dec. 17.

Chance-Vought UAW-CIO were scheduled to take a strike vote Dec. 17-18 to back up their demands on eight points in dispute. About 6,500 workers are employed in the Dallas plant.

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FINANCIAL

Northwest Airlines will pay a 28.75c dividend on its 4.6% cumulative preferred stock Feb. 1 to stockholders of record Jan. 18.

Trans Caribbean Airways will pay a 5c dividend on its Class A stock Jan. 15 to stockholders of record Dec. 31.

Solar Aircraft Co. netted $564,800, or $1.18 a share, on sales of $23,043,000 for the six months ended Oct. 31. This compares with a net of $259,000, or 51c a share, on sales of $9,188,100 for the same period of 1950.

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AROUND THE WORLD

Russia has developed a twin-jet night and all weather fighter much like the Northrop F-89, according to Jane's **All the World's Aircraft.** Publication says the engines are wing-mounted, while the Scorpion has them slung beneath the fuselage. The Reds also are reported to have a twin jet bomber in squadron service in Eastern Germany, probably the TUpolev-10.

British European Airways will streamline its organization Jan. 1 to cope with tourist service and newer types of planes. Firm will have seven main departments based on functional rather than geographic responsibilities.

Avianca, Colombian airline, paid 650,000 shares of stock valued at $1,222,000 to Lansa stockholders when it acquired the assets of Lansa. Latter is operating as a reduced fare firm, with rates 10-20% below those of Avianca. Lansa is using only DC-3's, in many cases over the same routes as Avianca.

Trieste Airways, using DC-3, DC-4 and Martin 2-0-2's, has been formed with the approval of occupation authorities. It will operate routes to Vienna, Geneva, Zagreb, Belgrade, Athens, Cyprus, Beirut, Nice and Barcelona.

Colombian cargo carrier, Latco, is planning to sell its three Curtiss-Wright C-46's and go out of business.

Israel Airlines El Al has started service between Johannesburg and Athens, with connections planned from Athens to Istanbul and Nicosia.

Spain's Construcciones Aeronauticas is developing a 30 passenger twin engine transport, probably an enlarged CASA 202. The 202, now nearing completion, will carry 14-18, cruise at 186 mph at 70% power and have a service ceiling of 24,700 feet.

French Nord 2500 cargo plane may be used for tests of the 2000 horsepower SNECMA turboprop T B 1000 engines. Range of the 2500 will be lower than the Bristol-powered 2501 version.

Brazilian airline strike by 16,000 workers was broken after six days when President Vargas seized the lines and mobilized their personnel.

Australian National Airways management is dissatisfied with the government's decision to keep it in business, at the same time considering government-owned Trans Australian Airlines as a "chosen instrument." ANA directors are still considering liquidating the airline because it must compete with a subsidized government carrier.

Britain's Transport and Civil Aviation Ministry proposes that private flyers pay $2 an hour for flying while their employers pay the balance and claim a partial refund on income tax returns. If the employer is in the excess profits tax bracket, the entire sum would be returned. Private flying now costs about $8.50 an hour.

French shipping firm Chargeurs Reunis has ordered a third deHavilland Ghost Comet for its Union Aeromaritime de Transport. The planes will be used on UAT's routes between France and Africa and the Far East. Firm also has an option on three Avon-powered Comets.

Italy's first modern jet, the Fiat G-80 tandem trainer rated at 550 mph, has made its first flight. It is powered by a deHavilland Goblin 35 engine. A single seat day fighter using a Rolls-Royce Nene and a night fighter powered by a de-Havilland Ghost engine are planned around the G-80.

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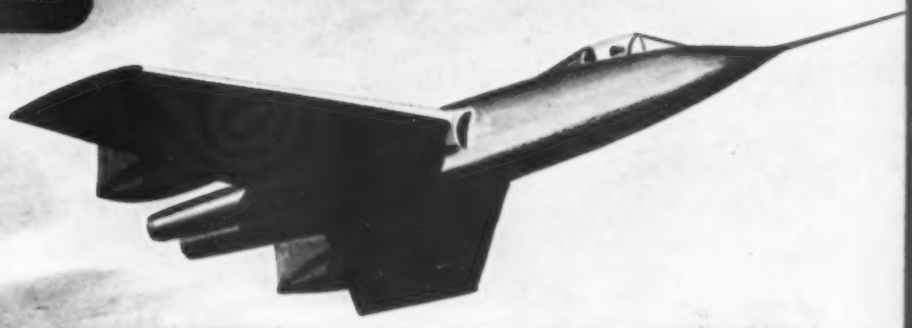

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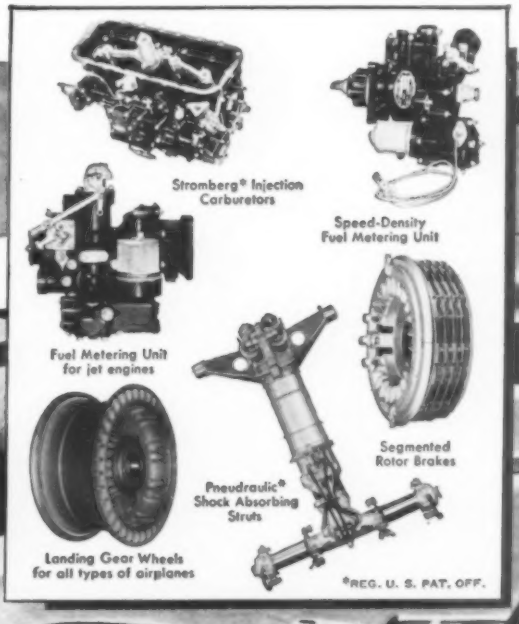
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TEXACO HAILS— NORTHWEST AIRLINES' 25TH ANNIVERSARY

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Entered as Second Class Matter December 31, 1951 Vol. 15 No. 31

RECEIVED
SERIAL RECORD

There's still no agreement between U. S. and Mexico on a bilateral civil aviation agreement. Latest of a long series of talks has been suspended with no date set for resumption.

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Latest plane purchase is by Seaboard and Western Airlines, which has contracted with Lockheed Aircraft Corp. for five all-cargo L-1049B Super Constellations at cost of $10,000,000 including spares. This represents first commercial purchase of the plane for all-freight, long-range, over-ocean use. S&W will use the planes, powered by four Wright Turbocyclone 3,250-hp engines, for service between U. S., Europe and Middle East.

On the critical 2,000-mile Atlantic hop, the L-1049B will carry 36,000 lbs. payload. Operating at 10 hrs. per day utilization, the fleet of five will produce 98,500,000 ton-miles annual air lift as contrasted with 53,600,000 ton-miles produced by company's seven DC-4's now operating at 14 hrs. per day utilization.

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Mobilization plan providing for use of commercial four-engined planes by the military in time of national emergency while at the same time maintaining essential civil air routes has been formally approved by Defense and Commerce Depts.

The plan, prepared by task groups under former Undersecretary of Commerce D. W. Rentzel, will be administered by Defense Air Transportation Administration, headed by Paul Butler.

Use of the planes would be extended to the military without disrupting essential commercial air routes and services. Program calls for use of "several hundred" aircraft and crews from the commercial four-engined fleet on 48 hours' notice. Planes used by the military would be operated by the airlines under contract and flown by airline crews.

The planes earmarked for possible military use are to be modified so that they'll be immediately available. Modifications, which will probably be done by the airlines as the planes come in for major overhaul, will include provisions for extra fuel tanks, navigation equipment, etc. Air Materiel Command will pay for the work.

Presidents of affected airlines will meet this month with Defense Secretary Lovett and Commerce Secretary Sawyer to discuss the plan.

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Air Navigation and Development Board has proposed a way of handling one en route aircraft per minute in each direction: division of federal airways into 2-way, three-quarter lanes with 15 miles between lanes and five miles longitudinal separation of aircraft.

National Air Council has suspended all operations. Reason: lack of funds to carry on what the Council considers a constructive program, particularly in the field of education. The Council, which will remain a legal entity for the time being, is placed on a stand-by basis, or "until such time as the aircraft industry and other supporters . . . may consider it advisable that activities be renewed." President, treasurer and managers will continue to serve without pay until a final decision is reached as to the Council's permanent fate. C. D. Frazer, executive vice president and editor of "Air Review" which is being suspended, resigned Dec. 31.

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Second atomic aircraft engine development contract has been awarded by Air Force to Pratt & Whitney Aircraft Division. Previously, AF had awarded General Electric Co. a contract to continue the Nuclear Energy for the Propulsion of Aircraft program started several years ago and actually to build a prototype engine.

P&W will work on a "different type" engine from the GE project, officials said. Consolidated Vultee Aircraft Corp. is building an airframe to flight-test the GE engine. A second airframe will be required to test the P&W engine, but no contract has yet been awarded for its construction.

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After prodding by National Aviation Trades Association, the Department of Labor has ruled that commercial pilots engaged in aerial dusting, spraying and other related activities are classified as practitioners of a "critical occupation." New classification was based on results of a national survey conducted by NATA and analyzed by CAA which showed that 61% of crop duster pilots are subject to military recall.

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Navy has dropped plans to build a prototype turbo-prop powered Douglas DC-6B. Navy had planned to investigate both the DC-6B and Lockheed Constellation with turbo-props, trying both the Allison T-38 and Pratt & Whitney T-34, but current plans call for only two Connie prototype with T-34's.

Actual T-34 engine installation will not be made until the spring of 1953. One of the two prototypes will remain at Lockheed after completion for development test work; the other will be flight-tested at Naval Air Test Center, Patuxent River, Md. The T-34 powered Connie, military

version of the L-1049, is expected to have a 35,000-lb. payload and long-range cruising speed of 394 mph at 25,000 ft.

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Although decisions on which military programs get first priority on machine tools and other items have been made by Office of Defense Mobilization, Mobilizer Charles Wilson has told the Pentagon that military planners will have to make the choices in 1952. Pentagon officials reluctantly agreed to do so.

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MANUFACTURERS

Engineering & Manufacturing Corp. headed by Don Marshall, has been set up at Galveston, Tex., to manufacture aircraft jigs and fixtures and also to do fabrication and assembly work. Marshall was formerly sales manager of Dorrell Co. of Glendale, Calif.

Republic Aviation Corp. expects to start production on F-84 wings and other components next month in a newly leased 216,000 square foot plant at Manor Haven, N. Y., near Port Washington, L. I. About 2,000-3,000 will eventually be hired at the new plant.

As of October 19, DPA had granted 49 certificates of necessity to aircraft builders, 116 to engine and engine parts makers, 12 to propeller and prop parts producers and 165 for manufacturers of aircraft parts and auxiliary equipment.

William F. Cassedy, Jr. has been elected president of Aircraft Radio Corp. Formerly vice president and general manager of Kearfott Manufacturing Co., Newark, he succeeds Lewis M. Hull, who becomes board chairman and remains as treasurer. Richard W. Seabury, who has been chairman of the board of Aircraft Radio Corp., becomes chairman of the finance committee. Frederick H. Drake continues as executive vice president.

Servel Inc., Evansville, Ind., has produced nearly two months ahead of schedule the first set of F-84 Thunderjet fighter wings being built under contract with Republic Aviation Corp.

Hamilton Standard Division of United Aircraft Corp. has received "substantial" orders for aircraft cockpit refrigeration units for installation in three Air Force and four Navy planes. Already flying with the unit in operation are North American F-86D and Lockheed F-94C.

American Aviation

NEWSLETTER **Vol. 15, No. 31**

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American Aviation is published every Monday by American Aviation Publications, Inc., Washington, D. C. Printed at the Telegraph Press, Harrisburg, Pa. Subscription rates for United States, Canada, Mexico, Central and South American countries—$5.00 for 1 year; $8.00 for 2 years; $10.00 for 3 years. All other countries—$7.00 for 1 year; $12.00 for 2 years. Entered as Second-Class matter in Washington, D. C., and Harrisburg, Pa.

Editorial and business offices: 1025 Vermont Avenue, N. W., Washington 5, D. C. Telephone—STerling 5400.

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PLANES AND EQUIPMENT

Douglas DC-7, which promises 363 miles per hour, comes close to the speed range of turboprop powered craft while reducing fuel consumption, even below that of piston engines. Wright's Turbo-Compound R-3350 has a reported specific fuel consumption of .39 pounds per brake horsepower.

Boeing's C-97 Stratofreighter has been tested as a forward area supply transport, carrying equipment as heavy as a 15,770-pound bulldozer. If it proves satisfactory for this use, it would follow light assault transports into a forward area, bringing in heavier equipment plus reserve supplies and troops. It would also be used with other assault transports as a cargo or troop paradrop carrier.

Proposal for a multi-engine commerical helicopter capable of carrying up to 45 passengers at 125 knots over 100-200 nautical miles has come from British European Airways. Specifications were presented to the British aircraft industry.

Conversion kit supplied with the Douglas AD-5 Skyraider enables the plane to be changed into a 15-passenger aircraft carrier transport in one version. Five passengers sit in bucket seats on each side and five more are located in the bilge. This version will replace the Grumman TBM which was stripped down to carry seven passengers plus high-priority cargo.

Safe Flight Instrument Corp.'s stall indicator is to be tried by several European aircraft manufacturing companies, including seven British firms, two French aircraft producers and two Italian plane builders.

Dr. Jerome C. Hunsaker, chairman of the National Advisory Committee for Aeronautics, has warned against de-emphasizing research and development in favor of frozen aircraft designs.

Piper Aircraft Corp. has started production of the PA-18-A sprayer-duster agricultural airplane, a development of the 125-hp Piper Cub. Craft, which can be switched from one version to the other in ½ man hours, has a capacity of 18 cubic feet of dusting compound or 110 gallons of liquid spray, enough to cover 220 acres of crops in 45 minutes.

New version of the Chance Vought Cutlass, the F7U-3, incorporating greater range and heavier armament, has made its first flight. Somewhat heavier than the -1, the new Cutlass has the same external configuration and is also placed in the "more than 600 miles an hour" class.

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MILITARY

Grover Loening, aviation consultant and former winner of the Wright Brothers Memorial Trophy, has declared the Army should be permitted to build up its own air arm for close ground support. He also disagreed with the USAF's strategic bombing concept, claiming the Russians must have hidden their vital targets where radar and bombsight cannot find them. Loening hinted a completely armored airplane capable of withstanding cannon power is being developed.

AIRLINES

Instead of following customary practice of "holding back" new equipment until sufficient deliveries permit installation of complete service schedules, Eastern Air Lines has put into service initial units of its new fleet of Lockheed Super Constellations and Martin 4-0-4's that have been received. First two of its 88-passenger Super Constellations took over primary schedules in late December and the 40-passenger 4-0-4's were being operated as extra sections for the regular Constellation schedules.

Although National Airlines has been okayed by the CAB for non-stop New York-Havana service, there's no indication as to when the carrier will be able to start such flights. NAL had planned to start Dec. 1, but a permit from the Cuban Transport Commission was deferred prior to that date when the Cuban Cabinet, after comparing NAL's permit with that of CUBANA, ruled that additional consideration would be necessary. CUBANA, affiliate of Pan American, has also been okayed by CAB for New York-Havana, but has asked reconsideration because of restrictions in the award. Cuban Cabinet doesn't feel that NAL and CUBANA permits are similar, which is said was the understanding when NAL received its permit.

A United Air Lines' review of its operations administration, following its DC-6 accident at Crystal Mountain, Colo., last June, indicated a need for greater importance being attached to the "indoctrination and training of flight personnel," according to CAB's report on the accident. CAB gave the probable cause of the accident as the failure of the flight, for undetermined reasons, "to follow the prescribed route to Denver and continued beyond the boundary of the airway on a course which resulted in the aircraft striking mountainous terrain." One reason advanced by CAB as to why the flight continued on a collision course was the existence of two radio ranges, one a low frequency range, the other a VAR range, with parallel legs extending along the airways in the flight path.

Informal meeting scheduled for late December between CAB members and local service airline heads has been postponed to mid-January.

Capital Airlines has installed a walkie-talkie system at Washington National Airport to facilitate communications between the ramp, flight dispatch office and maintenance crew chief's office. Operating on 3 watts, Capital's FM system has been assigned a frequency of 154.57 megacycles in the VHF spectrum, and is said to be the first industrial frequency allocated by the FCC for such a use.

Emory S. Land has been re-elected president of the Air Transport Association. The annual membership meeting also named three new ATA directors: E. V. Underwood, president of Robinson Airlines; G. T. Baker, president of National Airlines, and S. A. Stewart, president of Chicago and Southern. Charles C. Hubbard has been appointed assistant vice president-traffic of ATA and will also continue in his present capacity as assistant executive secretary of the Air Traffic Conference.

Capt. Charles Irving Elliott, Hawaiian Airlines' superintendent of flight operations and Hawaii's No. 1 commercial pilot, has retired after 22 years of active service. The first employe of the airline, Elliott joined the company on Aug. 1, 1929, the year it was founded. Capt. James Hogg succeeds him as superintendent of flight operations.

San Diego's city attorney has drafted an ordinance to provide for police licensing of airline ticket agencies and requiring a $1,000 performance bond. Regulation of ticket agencies for non-scheduled carriers has been under consideration in San Diego since last Labor Day when a number of San Diego service men were stranded at Burbank. San Diego County has passed an ordinance licensing ticket agents in unincorporated areas.

Northwest Airlines has reported net income of $1,816,322 for the 11-month period ended Nov. 30, after provision of $1,304,200 for income taxes on operating revenues of $45,236,522. A. G. Redpath, general partner and New York manager of the investment firm of Auchincloss, Parker and Redpath, has been named a member of NWA's board of directors, succeeding the late Edwin White.

Trans-Pacific Airlines Ltd., certificated carrier in Hawaii, has been excused from paying $8,123.65 in delinquent territorial taxes, according to Honolulu newspaper reports. Records showed that TPA owed the territory a total of $32,459.39. The territory settled for $24,371.54 under a compromise permitted by a territorial law passed in 1945. Reports said the federal government has 10 unsettled tax liens against real property and other assets of TPA totaling $351,021.05. A company official was quoted as saying that both federal and territorial taxes are now being paid and that the firm is about one-sixth of the way along in paying delinquent taxes. TPA's profit and loss statement for first six months of 1951 showed loss of $80,763.52. Mid-year balance sheet showed accumulated deficit of $909,978.76.

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CIVIL AERONAUTICS BOARD

CAB's proposed revocation of the non-sked letter of registration of Amos E. Heacock's Air Transport Associate was stayed in an eleventh-hour decision by the U. S. Court of Appeals. Court intends to review CAB's enforcement case against the line and its stay action assured continued operating rights for another few months at least. But by a 2-1 decision, Court ordered Air Transport to obey CAB frequency standards, as defined by Board attorneys, during the interim period. These will permit Heacock to operate a maximum of seven flights every two weeks between the same points.

Final mail rates for Capital Airlines, Chicago and Southern Air Lines and Robison Airlines were established by CAB last week in line with show cause orders issued in recent months. Capital, with a 53c ton-mile service rate effective from Oct. 1, thus became the 6th domestic line placed in the non-subsidy class. For C&S, also effective from Oct. 1, new rate is $1.45 a ton-mile based on a sliding-scale formula which will produce annual pay 20% under that received for the previous year. Robinson's new rates involve a sum of $467,325 in back pay and estimated an-

nual pay for the period beginning July 1, 1951, of $663,729.

United Air Lines applied for removal of restrictions which prevent local operations between Detroit and Philadelphia. Planning at least two daily round-trips between the two points in addition to present through services, UAL asked the Board to drop the requirement from its certificate that flights serving the cities originate or terminate at New York, on the one hand, and at Denver, or points, west, on the other.

Revision of Southern Airways' temporary mail rates was proposed by CAB to provide an additional payment of $185,000 for the first nine months of 1951. It would bring total mail payments for the period to Southern to $1,253,385. New rates for period beginning Oct. 1, would be based on 50c a mile and amount to about $1.5 million annually.

Western Air Lines applied for amendment of certificate for Route 63 (Los Angeles-Seattle) to include Las Vegas, Nevada, as an intermediate between Los Angeles and San Francisco. Now serving Las Vegas on east-west flights, WAL would, if CAB approval is obtained, provide additional service on north-south flights.

Chicago and Southern Air Lines' bid for temporary transfer of Greenwood, Mississippi, from its routes to Southern Airways was blocked by CAB. C&S has pending before the Board an application for permanent transfer of the point to Southern and wanted exemption authority to accomplish the action during the interim. But CAB held that the issues were too complex to be decided, even temporarily, without public hearings.

Temporary mail rates for Pacific Northern Airlines' recently-authorized U. S.-Alaska operations will be based on 50c per airplane mile under a CAB proposal. Rates would apply from Oct. 1, 1951, when PNA inaugurated service between Anchorage and Portland/Seattle. For intra-Alaska operations, CAB refused to increase temporary rates but upped daily base mileage upon which mail pay is computed from 2,333 to 3,021 miles.

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CIVIL

Politically-powerful League of California Cities is reported preparing a resolution calling for abolishment of the California Aeronautics Commission. There is no criticism of the commission or its members, but the whole philosophy of a state aeronautics board was a controversial issue before the legislation creating it was enacted and it has continued to be an issue of varying degree ever since.

Illinois' Department of Aeronautics has received appropriations to be used for construction of a number of air strips in small communities. In setting up the program, the department has decided to furnish the money for construction of adequately-equipped mono-directional strips measuring a minimum of 1,800 by 200 ft. Funds will be provided where no other public use airport is available and with the provision that the local municipality will acquire title to or effective control of the proposed site for the period of useful life of the installation.

Flight Safety Foundation has re-elected all present officers and board members and has elected William Barclay Harding to the board of governors. Harding is a partner in Smith, Barney & Co., investment bankers and brokers.

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LABOR

Western Air Lines' contract with Air Line Pilots Association-AFL calls for mileage pay of 1½ cents per mile plus 1¾ cents per 1,000 pounds of certificated gross weight flown each hour. Co-pilots receive a percentage of captain's pay on a sliding scale basis after two years of service.

Salary Stabilization Board has ruled engineers may be paid at straight time rates for overtime work unless a firm had a different plan in operation before Jan. 25, 1951. Firms which hope to pay premium rates for overtime must still obtain SSB approval.

Nearly 800 Continental Can Co. workers at the Coffeyville, Kans., aircraft parts and assembly plant have been approved for wage boosts averaging 15.16 cents an hour by the Ninth Regional Wage Stabilization Board

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AROUND THE WORLD

Philippine Air Lines, which has concluded new air treaties with Spain and Switzerland, now has rights to carry passengers between London and Madrid and Madrid and Rome on the European segment of its San Francisco-Manila-London international route. Swiss agreement grants PAL traffic rights in either Zurich or Geneva on its route to London via either Hamburg or Frankfurt.

Air France and British European Airways are planning to offer low fare services between London and Paris beginning next October. Cost will be about 35% under standard rates.

Air France's operations, excluding only mail planes and flights in the Far East, were stopped for 20 days Dec. 20 as flight crews struck in backing up demands for a wage boost of 96%, including accident coverage and greater retirement benefits.

New President of Compania Cubana de Aviacion is Sergio I. Clark, former Cuban minister of communications. He succeeds the late Antonio T. Govin and formerly was a vice president for the airline.

New Zealand government is considering a plan to permit injection of private capital into state-owned New Zealand National Airways Corp., which operates all main domestic air services in New Zealand. Government, however, would retain control through a majority share holding if the plan should be adopted.

Swedish Air Force is reported to have placed a production order with SAAB for company's new J. 1200, all-weather delta wing fighter. Company is now filling orders for the 650-mph J-29 single-seat fighter, powered by the de Havilland Ghost.

Spain and Colombia have been negotiating in Madrid over terms of a bilateral air agreement to replace the temporary accord of last June which enabled AVIANCA, Colombian airline, to start operations between Colombia and Madrid.